

**Technologies and Policies for the Integration of Financial Services Industry  
Across the European Communities**

by

**Usman A. Ghani**

B.E. (Mechanical), N.E.D. University, 1980

Submitted to  
**The Alfred P. Sloan School of Management**  
in partial fulfillment of the requirements for the degrees of

**Master of Science in Management**  
and  
**Master of Science in Technology and Policy**

at the

**Massachusetts Institute of Technology**  
May 1991

© Usman A. Ghani, May 1991, All Rights Reserved.

The author hereby grants to M.I.T. permission to reproduce and to distribute copies of this thesis document in whole or in part.

Signature of Author: \_\_\_\_\_

M.I.T. Sloan School of Management

May 17, 1991

Certified by: \_\_\_\_\_

Professor Stuart E. Madnick  
Thesis Supervisor

Certified by: \_\_\_\_\_

Professor Richard de Neufville, Chairman  
Technology & Policy Program

Accepted by: \_\_\_\_\_

Jeffrey A. Barks, Associate Dean  
Master's & Bachelor's Programs

# TECHNOLOGIES AND POLICIES FOR THE INTEGRATION OF FINANCIAL SERVICES INDUSTRY ACROSS THE EUROPEAN COMMUNITIES

by Usman A. Ghani

Submitted to The Alfred P. Sloan School of Management in partial fulfillment of the requirements for the degrees of Master of Science in Management and Master of Science in Technology and Policy

## ABSTRACT

This thesis evaluates the existing Information Technology platforms of five sample European banks preparing for the unification of the European Communities (EC) in 1992. Beginning with a perspective on the unification of EC and the role of the Commission of European Communities (CEC), three approaches to standards are described; harmonization, mutual recognition, and subsidiarity. The imminence of a Financial Services Industry (FSI) due to twenty CEC directives is then detailed. It is shown that EC will be the world's largest banking market in 1992. Different types of strategic alliances underway among the financial community are presented.

The thesis examines policies adopted by FSI members that constitute a full spectrum of possibilities; fragmentization, stratification, regionalization, cross-integration, and globalization. Personnel-Customer and Product-Geography matrices show the marketing focus of these banks. Comparisons of short-medium- and long-term technology policies point out shifts that will be costly without a consistent policy framework for FSI at CEC-level and at the bank-level.

Integration of Information Technologies (I/T) of each bank as well as across banks was found lacking owing to basic differences in I/T platforms and to lack of bridging technologies. Most mergers and alliances were stalling or costing heavily in composing information from the heterogeneous data sources. This thesis presents a detailed description of these problems and the work going on at MIT's Composite Information Systems Laboratory as a possible *hybrid* solution for facilitating the unification through implementation of *subsidiarity*.

The thesis concludes that a three-layered approach will effectively address the bold unification agenda. At the highest level, strategic connectivity through CEC efforts for FSI operational policy and homogenizing standards are needed. At the FSI level, organizational connectivity for corporate coordination is required. Whichever policy is adopted, some kind of logical connectivity will be necessary at the lowest/local levels across the EC.

**Thesis Supervisor:** Dr. Stuart E. Madnick

**Titles:** John Norris Maguire Professor of Information Technology & Leaders for Manufacturing Professor of Management Science

## KEY PHRASES

Communication and Connectivity Across Systems

Composite Information Systems

Decentralized Systems Management

EC

EC12

Europe 1992

European Communities

European Financial Technologies

Financial Services Industry

Heterogeneous Databases

Policy Issues in Banking Technology

Management Information Systems with Heterogeneities

Regional Policy Implications in Information Technology

Strategic Alliances Across Borders with Technology Sharing

Systems Synergies in Mergers and Acquisitions

**DEDICATION**

To

**Monsieur Jacques Delors**

President

Commission of the European Communities

and the persevering Directorates in Brussels, Belgium



## ACKNOWLEDGEMENTS

I offer my gratitude to Professor Stuart Madnick for his continual guidance and encouragement in my research efforts and assimilation. For a topic having such breadth and consequence, I had collected and analyzed a multitude of details over two years. Often, it was difficult to condense and generalize *all* the facts in a perspective while *also* keeping sufficient details. This focusing process provided me genuine insights – the confidence I have thus attained shall remain a differentiating acquisition throughout my life.

I was fortunate in receiving constructive criticisms from Drs. John Ehrenfeld and Richard Tabors in the Thesis Proposal Seminar. I benefitted a lot from Professor Richard Locke's course, International Business Management. The Technology & Policy Program – particularly Professor Michael Lipsky's course, Policy-Making Process – provided value in addition to business aspects covered at Sloan. Dr. Michael Siegel, my thesis reader, answered questions and patiently observed my evolution.

Ms. Patricia McGinnis, Executive Director of MIT's International Financial Services Research Center, greatly helped by reading several passes of the draft to mask the identity of the five banks in my sample. I am also lucky in having had a useful discussion last year with Professor Michael Porter of Harvard University on his new book, *Competitive Advantage of Nations*, and its applicability in regions.

I wish to thank The Benjamin Franklin Program in Paris for the Summer Session on Europe'92, particularly, Professor Laurent Benzoni of Ecolé Telecom, who has done original work in two areas; economic feasibilities of telecommunication backbones for a single-Europe, and an *integrated* graduate education in I/T. Thanks also to Professors Armin Heinzl (WHU-Koblenz), Niels Thygesen (IE-Copenhagen), and Wim van der Meer (Rijks-Leiden).

My special thanks go to gentlemen of high stature who provided me with their invaluable time; Monsieurs Pierre Ury (Europeanist), M. Ghazale (AT&T), Géry Daeninck (McKinsey & Company), Stanislas DeFollin (IBM), and Jean-Pierre Landau (IMF). Their advice and references were extremely helpful.

Most of all, I would like to thank the seven banks in Europe who not only participated voluntarily in my research but also whose senior executives very kindly gave me time to carry out extensive interviews. Without their trust, patience, and candor, I would not have made significant progress. Their contribution to the cause of academic research is gratefully acknowledged.

## TABLE OF CONTENTS

<i>Chapter</i>	<i>Title</i>	<i>Page</i>
1	Introduction and Background	7
2	The Unification of European Communities	24
3	Emergence of a Financial Services Industry	57
4	Policies and Responses for 1992	94
5	Information Composition Problems	128
6	State-of-Art Technologies for Database Integration	167
7	Conclusions and Recommendations	183
<i>Appendix:</i>	A.0 Five Representative Case Studies	195
	A.1 Bank 1	198
	A.2 Bank 2	224
	A.3 Bank 3	244
	A.4 Bank 4	281
	A.5 Bank 5	303
	B – Bibliography	341

## CHAPTER 1

### INTRODUCTION AND BACKGROUND

#### 1.1. Background.

During the Summer of 1990, we conducted a detailed study into the Information Technology (I/T) activities of five major European banks preparing for the unification of European Communities (EC) in 1992. These banks were chosen primarily because they are :

- (a) among the largest in terms of assets and customer-base in the EC region, and
- (b) making major strategic changes and taking intensive technological strides to address the issues arising out of 1992.

The time selected for our research was reasonably appropriate because preparations for the 1992 unification of EC were well underway at most of these banks. A detailed perspective of the unification itself is presented in Chapter 2.

Specifically, among the 279 directives issued by the Commission of the European Communities (CEC) in Belgium, around 25 relate (directly or indirectly) to financial services. The Second Banking Co-ordination Directive, issued in 1989, was beginning to have policy effects on all the banks <sup>1</sup>.

---

<sup>1</sup> Many reports appeared in periodicals like Banking Technology, Business Week, and The Economist.

The emergence of a Financial Services Industry (FSI) in EC as a result of these directives is explained in Chapter 3.

Due to the research focus of MIT's Composite Information Systems Laboratory (CISL) on assimilating information from data sources that are heterogeneous (i.e., geographically dispersed, logically disparate, technically orthogonal), and due to the author's keen interest in Europe, we had natural curiosity into the CEC directives and their technology and policy consequences on the imminent FSI. We genuinely felt that a research into the I/T policies of FSI in EC was in order. Thus we undertook this research.

## **1.2. Scope.**

Our study investigated the linkage between the CEC directives and emerging FSI practices, particularly in relation to Information Technology. We focused on :

- how the EC directives were interpreted by these banks,
- how the banks formulated their strategies, and
- what I/T operating plans were adopted by them as a response to the FSI-related directives, particularly, The Second Banking Coordination Directive.

More specifically, we evaluated the options available to the I/T function in helping address the respective *bank's* regional unification policies.

In Appendix A, we have reported detailed case studies of these banks. The author has placed his comments at appropriate places in these case studies. These comments typically relate to the CEC standards, the bank's technological vision, and expectation out of I/T function for 1992. The appendices are an integral part of this thesis as they highlight important problems and the status of these banks.

In our approaching these banks, we invariably interviewed the I/T groups to get their interpretation of the situation. Wherever possible, we also met other senior executives of each bank, (e.g., the International Division executives). This highlights the most important points put forward by this thesis with particular attention to Information Technology and issues related to information composition across the EC region.

### **1.3. Focus.**

Within our I/T scope, this thesis focuses on problems arising in the newly-born FSI. We have identified issues in relation to the *composition* of information (for Transaction Processing *as well as* Executive Support) from different data sources within each bank. Such sources are, obviously, *heterogeneous* due to the :

disparate portfolio of hardware platforms,  
diverse cultural practices and procedures,  
discrete geographical extents involved, and  
different histories of systems evolution.

Over a span of three different chapters (Chapters 4 – 7), we focus on these issues and how the banks are beginning to address (or planning to address) them, and the order in which the strategic and operational objectives for 1992 will be taken up.

#### **1.4. Problems.**

Among the several problems that the author discovered during his research in EC, the most important ones included the following four :

##### **1.4.1. The Challenges of 1992.**

Most banks comprehended only two possible FSI strategies for 1992;

- Remaining Mostly National <sup>2</sup>  
i.e., expanding only discretely in the future
  
- Going Fully Regional  
i.e., taking 'the plunge' now, whatever the costs

Due to the transitional phase up to 1992 (and perhaps, a few years beyond that as well), the author believes that there could be (in fact, there were clear evidences of) three additional FSI strategies :

---

<sup>2</sup> We will describe National as a special case of what we call, Fragmentation, in Chapter 4.

- Stratification  
i.e., working in a few selected sub-regions only
- Cross-Integration  
i.e., integrating a mix of fragmentation and stratification.
- Globalization  
i.e., going beyond the regional boundaries of EC.

In this thesis – using the Appendices and Chapter 4 – we will explain each of these five possible policy-response strategies of FSI in the European Communities,. We will also describe the basic differences among them, and the costs and benefits of choosing each of these strategies. The reader will discover (as we did) that a single policy-set at a central location (Brussels, in the case of EC) can be interpreted and responded to in many different ways by different organizations in the same industry.

One I/T executive said, “We will standardize *everything* to conform to *one* EC standard and this will be our response as well as competitive edge.” When the same executive was asked as to what he thought was *the* EC standard-to-be, he was not sure! Such policy implications between CEC and the FSI will also be commented on throughout this thesis, particularly in the Appendices and in Chapters 3, 4, and 5.

We will also attempt to set criteria for deciding which strategy response to adopt and what possible Information Technology solutions to work on to bridge across the newly emerging problems.

The thesis stresses in Chapters 3 and 4 that the CEC needs to formulate few additional, important directives relating to the integration of Information Technologies on a Regional basis. It should thus address the imminent issue of standards in this particular focus area, and help in the translation of its policies based on existing industry (FSI) state-of-art technologies.

#### **1.4.2. Systems Responses.**

We found that, in order to meet their regionalizing strategies, the I/T functions (or systems divisions, as the reader may choose to call it) in most banks, were typically responding by one of the following two methods :

- Standards  
i.e. pronouncing to keep all hardware, software, etc. the *same* so that the technology platforms and human efforts could streamline fully with the 'center'.
  
- Autonomy  
i.e., maintaining at each locale its existing platforms and practices and using only networking <sup>3</sup> – hard-wiring all systems – for data communication and *faster* throughput.

Standards were seen as helpful in “keeping things same across the board” and “facilitating the centralization and control process.” Autonomy with

---

<sup>3</sup> We use the term ‘physical connectivity’ for these types of hard-wired connections in Chapter 6.



physical networks (e.g. LAN, WAN,<sup>4</sup> etc.) were perceived as solutions to pass on-line data across the different system networks throughout the EC geography.

In reality, the systems responses do not only use these two 'pure' or 'extreme' approaches but also had some 'mixes' of these two because cultural practicalities and/or budgetary limitations could not enable a pure stance as such. It was interesting to see that, in most situations, the I/T functions were not even sure which was *the right response* to take and what strategy to consistently adhere to through 1992 and beyond. More on this in Section 1.4.3 below and in Chapter 4.

It was clear that the communication envisaged by these banks did not cover the entire spectrum of connectivity, i.e., only physical connectivities like LAN, WAN, etc. were being worked upon whereas higher level connectivities that could make the systems actually exchange real-time data with each other (and pass like-for-like information) were not really being installed as such. These higher level connectivities include :

- Logical Connectivity  
i.e., similarity of data and entities being matched/integrated
  
- Organizational Connectivity  
intra-organizational (and cross-functional) usage of data
  
- Strategic Connectivity

---

<sup>4</sup> LAN = Local Area Network, WAN = Wide Area Network.

inter-organizational (and industry-level) sharing of data.

In Chapter 5 of this thesis, we will also classify the connectivity problems being faced by the FSI and the levels at which they are being directed. Each bank's vision of what its Information Technology problems will be around 1992 and how the composition solutions will evolve are detailed there.

Also tabulated in Chapter 5 for a quick reference, will be author's critique on the connectivity levels, their relevance to the problem at hand in the respective banks, and the shortcomings in the envisaged solutions.

Section 1.6 below mentions and Chapter 6 presents the paradigm evolved at Composite Information Systems Laboratory (CISL) and how its Tool-Kit (CIS/TK) could help in meeting the connectivity concerns of the FSI executives in the European Communities and also help the CEC Directorates in evaluating the potential I/T responses and standards for 1992 and the unified region beyond.

### **1.4.3. Shifts in Industry's Policy.**

We also found that each of the banks have had their long-term plans for Information Technology in place for sometime. But with the advent of The Second Banking Coordination Directive in 1989, the existing I/T strategy and future plans were both re-evaluated. The banks tried to figure out what existing shortcomings in their systems could prevent them from attaining the benefits of the narrowing 1992 window of opportunity <sup>5</sup>. In many cases, we were informed

---

<sup>5</sup> Some banks are still involved in this assessment because the Commission does not have a clear-cut policy or FSI standards for the EC region.

of significant lack of systems 'upgrading' capabilities at a *new* (regional) level. We were told, for example, that hardware limitations aside, there were critical performance limitations that the banks were beginning to feel and did not have a clear system solution in the immediate future.

At the same time, we also found that there were instances (in three banks out of the five that we studied) where long-term I/T strategies were in a different direction than the impending demands on I/T for a regional EC response. But the banks were indeed investing in this short-term attraction (1992 being only two years away) and thereby going in a different directions than what their long-term plans would otherwise have led them to.

Partly, we feel that this problem is due to the missing role of CEC in establishing communications and connectivity standards as well as working jointly with the newly emerging industry on feasible options over different time frames.

The two investment banks, had their short- and long-term policies for Information Technology quite well-aligned. The other three banks – in order to meet the short-term opportunities for 1992 – made considerable deviations in their long-term plans. In effect, their long-term plans were abdicated for some time till "the challenge at hand" was adequately addressed. This shift in policy is costly and is becoming a cause for concern for these three banks. The costs are not fetching the expected benefits..

In this thesis, we will attempt to state few criteria for evaluating differences between existing systems and where possible beginnings could be

made. These criteria could be used to decide when to 'go for' changes in a big way and when to avoid the 'distractions,' i.e., when existing strategy for future plans does not match with new, medium-term EC policies. The underlying message in this part of the thesis is that the Information Technology capabilities – more specifically the status of connectivities – are the most important deciding factors on what types of and when data integration can be effectively, efficiently, and economically attained.

#### **1.4.4. Insufficient Systems Synergies.**

In line with the Systems Responses (1.4.2. above), most of the EC strategic alliances taking place are mergers and acquisitions (M&A) among the banks. In our research, we also found that M&A had the highest popularity, followed by joint ventures (J/V) and, finally other strategic alliances of sorts. As yet, large-scale industrial cooperation to facilitate any strategic alliances (with the exception of the SWIFT project for securities trading) has not taken shape.

We found that in most cases, the technical platforms in the banks that we investigated were not adequately equipped for the kinds of business strategies taken for granted by them. Even in the case of internal corporate standardization, the I/T platforms, methods, procedures, networks, and the related information architecture had not been put on a standard. Thus, it was difficult to not only evaluate but also envision as to how a totally standardized I/T policy could practically support the competitive strategy of the bank within the limited time remaining for 1992.

Because of the heterogeneous nature of the systems of merging banks (or banks entering other forms of alliances), systems synergies in their data centers (back offices) were not completing effectively or as planned. This lack of synergism was costing a lot to these banks. The author recommends that such banks would be more profitable in entering into alliances with others in the industry by **first investigating each others' systems portfolios** for consistencies and planning ahead of time the solutions to inconsistent approaches to unification. Because these portfolios are diverse, the only solutions that could work in such diversity would be a 'reactive' solution. One example is the CIS/TK.

This thesis will document in Chapter 5, the synergy problems and point out areas that need attention on priority by the bank executives as well as the CEC officials to possibly help in solving such divergences. We will point out, as we go along, policies that could possibly help in the resolution of this disparate-heterogeneous--diverse issue.

### **1.5. Technologies and Policies.**

The divergences propagated through public policies formulated by CEC and the actual implementation solutions/options available to the FSI are an important aspect of this thesis. We attempt here is to help the Commission rethink and formulate policies *in cognizance with* the technologies available to the FSI in the short- to medium-term and to help in the setting of standards for using this window of economic and political opportunity.

While attempt is made to treatise on the highest-level considerations in fusing information technologies among the EC cultures, the detailed institutional arrangements are not presented here. These can be a theme for another Technology and Policy thesis in cooperation with CISL in the future.

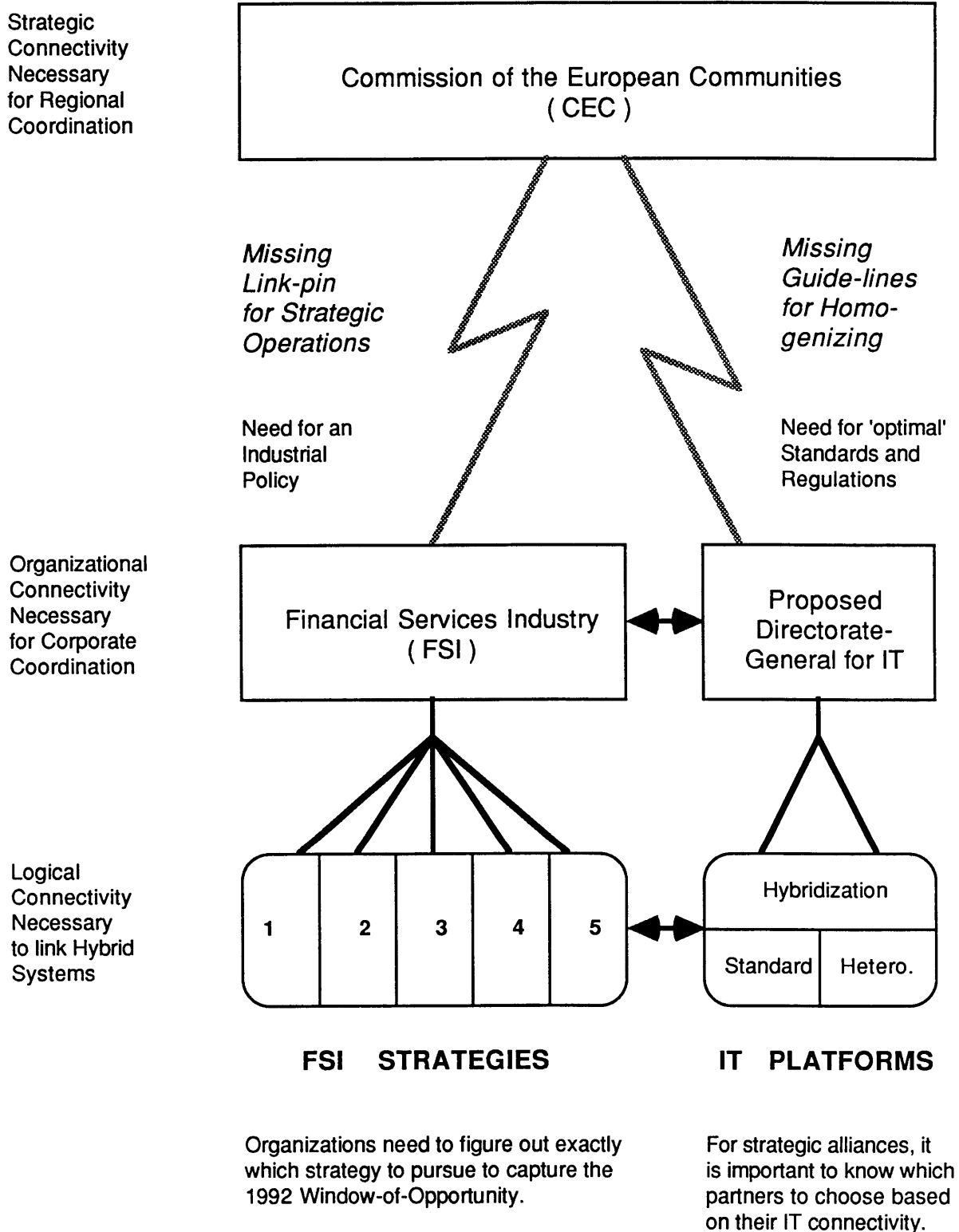
The diagram in Figure 1.1 (Technologies and Policies – Identification of Areas Needing Careful and Joint Attention Across EC) provides the broad coverage of this thesis and its three key findings. It points out the need for an industrial policy at the CEC level and the development of I/T standards specifically to support the new, rapidly evolving European FSI. At the systems level within the FSI, it points out to transitory strategies (detailed in Chapter 4) and insufficient technology platforms (detailed in Chapter 5).

### **1.5.1. The Three Layers.**

As Figure 1.1 shows, we found that, in fact, there needs to be a three-layered approach to the integration of Financial Services Industry in the European Communities. Each layer *and the links between* these layers is important and needs to be looked into and addressed thoroughly. Such thoroughness can be ensured through the co-joint efforts of four agents in the entire process:

- Commission of the European Communities
- Representatives of the Financial Services Industry
- Representatives from the twelve finance ministries
- Other controlling bodies of the EC (e.g., the Auditors).

**Figure 1.1: Technologies and Policies –**  
 Identification of Areas Needing Careful and Joint Attention Across EC



### 1.5.2. Criticality of Strategic Link-Pin for Strategic Operations.

As also shown in Figure 1.1, we believe that the two links from the CEC policies to the FSI need closer attention than what has been provided thus far. At the strategic level, the *conversion* of the CEC directives into semi-specific operating goals of FSI is of paramount importance. This could be achieved through a carefully designed FSI industrial policy that will provide some direction and foot-holds to the newly evolving industry.

Thus far, there was no FSI; there were only banks (in a product-segmented and customer-segmented markets, see Section 4.3). That too, under the protection of individual country-governments. Now, with the de-regulatory directives and highly uncertain (and volatile) environments, the industry can not achieve its inherent potential without full and active cooperation of the four agents specifically mentioned in 1.5.1. Particularly, the CEC and FSI need to work very closely in evolving policies for the industry's future.

Without appropriate policies and guidelines for operational strategy, it will not be economically feasible for FSI to achieve external strategic connectivity. As a matter of fact, without a clear direction on a European standard, the organizational connectivity may also be slowed because organizations desiring a uniformity across its functions and across others in the industry, may not be clear on which standard to adopt. Thus, availability of external standards will greatly facilitate internal connectivity for organizations desiring aligning themselves in a consistent manner, i.e., both, internally as well as externally.



Corporate coordination will continue to be seriously impeded in the lack of more detailed policies that can provide ground-rules for the industry and help it in the evolution of strategies that will place it among winners in the backdrop of on-going globalization that will obviously pose a tough competition for European FSI.

### **1.5.3. Criticality of Standards and Regulations.**

The second important link-pin is the need to *focus the disparate* technologies in certain specifically chosen directions so that standards and regulations are developed in a manner acceptable to and in the productive interest of all FSI I/Ts. We believe that the *hybridization* approach of CIS/TK presented in Chapter 6 is an excellent paradigm to address the *subsidiarity* approach of CEC. Also, we think that the heterogeneities will prevail longer than expected (cultural unification of Europe is not expected by 1992), much longer than the economic unification.

Therefore, in order to facilitate the economic and monetary fusion, the homogenizing of standards propounded by CEC will be possible not through a uniform standard for all twelve countries but the co-existence of some local disparities alongside some important data and connectivity standards at regional level. Additionally, *bridges between* (twelve or fewer) standards will be needed to compose information at the strategic (CEC) level for the Directorate as well as the industrial (FSI-shared) level. So also for the organizational data sharing.

## 1.6. CISL.

The Composite Information Systems Laboratory at MIT is an interdisciplinary, cross-institutional research and development group. It actively studies problems of *information composition* from heterogeneous data sources. It has produced a 'Took-kit' (CIS/TK) that provides a dynamic paradigm for the unison and implementation of such difficult situations. CIS/TK is an evolving product. There is on-going research for better bridging strategies for different types of databases. Details on CISL paradigm are provided in Chapter 6.

The yesteryears' realm of computers (MIS) has been integrated to the high-tech realm of electronic and optical communications. Together, they have been fused as Information Technology (I/T) that provide both an inward as well as an outward focus to organizations and industries. Such a technology can today be *embedded* by companies, alliances of companies, industries, governments, and regional actors to provide on-line, real-time information that can be critical to competitive standing at a regional level. I/T (computers-and-communication) are the vital links of today's governments and industries.

Indeed, a major challenge in the I/T world of today is the proliferation of incompatible machines and operating systems running on them. Operating systems tend to be hardware-vendor dependent. Even those operating systems that were explicitly intended to be universal, are *extended* by hardware vendors in their perfectly healthy struggle to stay ahead of competition. They do not want to be compatible with everyone else, they want to be compatible with everything they had before. So, hardware vendors cannot provide a *universal* standard or set of standards. Software vendors and their standards are slightly better because

they can be made to run on different machines but they can not match logical heterogeneities of several sorts (e.g., matching a relational database structure with hierarchical database, etc.) or cross-functional, cross-geography, and multiple-currency disparities. Clearly, a set of bridges and software that will enable heterogeneities to become transparent to the end users will be the most desirable solution in the heterogeneous case of European FSI. It may, in fact, be *the only possible* solution.

With several types of data sources across the FSI in the European Communities and several types of communication linkage standards, CEC will need to propound and pronounce *only a few good standards* and then, base their regulations on them. This will mobilize a set of good practices in the newly evolved industry who could select I/T platforms and bridges to achieve sound logical connectivity and 'safe' physical connectivity.

### **1.7. Presentation of the Thesis.**

This introduction is followed by six chapters and a set of appendices. The reader can go through this document in its entirety or take one of these two possible routes :

- For understanding the policy/evolutionary problems;
  - Chapters 2, 3, 4, 7, and Appendix A (in its entirety).
  
- For picking up the technology focus problems;
  - Chapters 4, 5, 6, 7, and a skimming of Appendix A.

## CHAPTER 2

### THE UNIFICATION OF EUROPEAN COMMUNITIES

#### **2.1. Introduction.**

The world today is witnessing accelerating convergence of the European Communities (EC) in terms of economics, politics, and society. The end of 1992 has been set by the Commission of European Communities (CEC) as a landmark for achieving an integration of the first order. By first order, we mean a unification whereby member states can reap immediate economic benefits to mutual advantage and the economic consolidation in a large region becomes practical. Beyond 1992, we will also see higher order integrations taking place. These would be the *micro* unifications in cultural and social terms and may take substantial amount of time because of the vast intra-regional differences that will continue to exist at lower levels within the EC for quite some time. We, through our research, expect these to be taken care of in the next century.

#### **2.2. Historical Perspective.**

There is a long history behind the convergence scheduled for 1992. At the end of the Second World War (WWII), most of the countries in Europe realized how meaningless it was to have fought among themselves and to have fallen into disarray, whereas there were potential unification possibilities among

them.<sup>1</sup> One of the visionaries was Sir Winston Churchill who, even before the war, thought that it was possible to formulate a “United States of Europe.” Another visionary was J an Monet who had worked with Sir Winston, President Franklin Roosevelt, President Charles DeGaulle, and others in Europe, convincing them to help pioneer efforts to forge an alliance of the European Communities.

### **2.3. Treaty of Paris.**

In 1951, the European Coal and Steel Community was formed. This was also called the Treaty of Paris. It was the prime mover of Europe’s industry because coal and steel were backbones in the economic revival of Post-War Europe. The treaty was seen as a fundamental tenet in the re-emergence of Western Europe as an Allied economic power. This move of 1951 was in fact an economic necessity of the times for the Europeans.

### **2.4. Treaty of Rome.**

In 1957, there was a political move because a higher order need emerged. The Treaty of Rome was signed that year. It pronounced the European Economic Community (EEC) with six nations jointly leading a trade bloc. These countries were Belgium, France, Germany, Holland, Italy, and Luxembourg. They agreed that they would act in mutual benefit for each other, would make alliances

---

<sup>1</sup> Personal accounts of Monsieur Pierr  Ury, distinguished promoter of single Europe idea, narrated to the author in Paris, July/August 1990.

among themselves when negotiating with rest of the world, and will insure that economic and other advantages of these six countries would not be overlooked in any way. The Treaty of Rome became a very important landmark at that point in history.

## **2.5. The Single European Act.**

It was clear to all visionaries of different times that unification of Europe is going to be a difficult process due to the heterogeneous cultures, the disparate state of industries, and the socio-political processes that were divergent in each of these countries. J an Monet had said that:

**... The integration of Europe will only be possible in a *thousand little* steps ...**

In answer to an author's question to President Jacques Delors <sup>1</sup> on the possibilities of integrating technology and culture simultaneously, President Delors stressed that :

**... The best way to unify would be through a *step-by-step* approach ...**

In 1983, a renewal of interest in the unification trend occurred to formulate a stronger block of communities. This was due to the awareness at that time that growing American and Japanese world markets were causing a decline in European market shares and Europe's overall political influence.

---

<sup>1</sup> Following President Delors' address on *Europe 1992 and its Meaning for America*, at Harvard University, September 22, 1989.

Around that time, a clear understanding emerged among the EEC countries that there were several differences of considerable magnitudes among them. These included, for example :

- differences in corporate profits
- lack of monetary and exchange rate stabilities
- lack of coordination of the governments in designing reinforcing economic policies
- large differences in wages across the many borders
- differences in the amounts and types of investments made by and in each of them, etc.

The European Parliament, created through the Treaty of Rome, therefore decided to study in detail how such differences could be resolved and how the region could be integrated again on firmer grounds.

In 1985, with definite economic motives, a study was commissioned to an Italian economist, Paolo Cecchini. He studied barriers to trade – both tariff and non-tariff – and the cost of these barriers to each country, as well as the community as a whole. By this time, the EEC membership had grown to include 12 countries, the additional ones being Denmark, Greece, Ireland, Portugal, Spain, and the U.K., the last ones being Portugal and Spain in 1986.

## 2.6. The White Paper.

Cecchini's work was published by the Commission in 1987, titled, *EC White Paper on the Completion of the Internal Market*, abbreviated: *The White Paper*. This paper not only focused on the issues that were creating the differences among the member states, but also furnished statistics that amazed, both the government officials and the business executives.

Some writers also gave a deeper political meaning to the idea behind *The White Paper*. For example, Jean-Jacques Servan-Schreiber in *The American Challenge*, said that the United States may in fact *take over* the European Community because of the large size of U.S. multinationals existing in Europe who were taking away profits that they made in Europe and who in fact were impeding the innovation and technological development of Europe on its own. He strongly suggested the forging of a common industrial policy as well.

In 1986, subsequent to the issuance of *The White Paper* and its intense response from government and industry, The Single European Act was signed. This was the first major amendment to the Treaty of Rome. Its mandate was to integrate the 12 countries of the EC to provide greater economic growth, provide more jobs, control inflation, improve productivity and investment within EC, be interdependent so as to withstand world created shocks, and address other socio-political and economic issues jointly under one umbrella based in Brussels.

Subsequently, The Cecchini Report was published in May 1988. It was titled *Cost of Non-Europe* and summed up the following important statistics :



<u>Costs</u>	<u>% GNP of EC</u>
Cost of Frontier Formalities	0.2 - 0.3
Cost of Fragmentation Due to Different Norms and Technical Specifications	2.0 - 2.4
Cost of Discrimination in Public Procurement	2.1 - 2.2
Inefficiencies Due to Insufficient Competition	1.0 - 1.6
<b>Total</b>	<b>4.3 - 6.4</b>

This amounted to around 170 - 250 billion European Currency Units (1ECUs = \$1.2) a year. In addition, there was a cost of mis-allocation due to flawed industrial policy. Also, it was seen that technology – by then a clear enabler or disabler of economies – was not being innovated sufficiently by European companies within EC and that market share of EC companies was losing at the rate of 1% every year. In electrical goods and electronics, around 5% of market share was lost by traditional European industries <sup>2</sup>. In automotives, around 4% was lost to non-EC countries. In office machines and automation, at least 2.5% was lost, and so also in many other industries – each industry losing at least 3% and at most around 7% annually. Very few industries were gaining ground or making breakthroughs in the world markets. This also prompted the need for a community wide action to revitalize technological innovation and to

---

<sup>2</sup> Big names like Philips and Grundig suffered the most.

bring about changes in the structures of the companies and industries so as to make innovation a regular feature instead of recurring intermittently, at times of crises only.

By the removal of barriers to trade and cross-border movement, there will be a direct increase of distribution and communication across the EC region. It is a fact that road transportation in the EC is 80% of goods flowing within its borders. Cross-border delays are of the order of 1.5 - 11.7 hours, depending upon the route taken. Driver time wasted plus vehicle time wasted on an 18 hour trip from the UK to Italy is equal to 22% operating costs.

Thirty five percent trucks on EC roads return empty without destinations. This is a 5% component of the overall price. Greater competition will favor low cost producers with pan-European networks. Information Technology (I/T) can play an important role <sup>2</sup> here by instituting systems that will share information on cargoes for return trips, will trigger information about deliveries and market penetrations, and will help balance the import and export of the flow quantities.

Distributed power will increase relative to manufacturing power because single market retailers, distributors, and brokers are forming cross-border alliances to consolidate their buying power, and several producers will be competing for the same shelf space. In the end, the ones that will remain and dominate the markets will be those distributors who form prudent alliances and share information effectively.

---

<sup>2</sup> Use of I/T in providing strategic advantages in services industries in general and Financial Services Industries in particular is detailed in Chapter 3.

## 2.7. Importance of the EC.

In order to get an estimate of the relative size of the EC market, 40% of U.S. foreign investment is in the 12 EC countries. This is almost 30 times that of Japan because Japan was not allowed to invest earlier on in Europe after WWII. Additionally, the multinational U.S. companies in Europe are producing goods and services worth around \$230 billion, and this is about four to five times the U.S. direct export. Further, the EC market *also* accounts for almost a quarter of the U.S. merchandise exports, and almost 30 percent of the U.S. service-exports today. Obviously, the EC attitudes can cause concern to the U.S. because:

- it helped in all respects, the liberation of Europe in WWII
- it helped in setting up and revitalizing the economies of European countries after the War
- changes in the trade legislations of EC will affect the sale of U.S. goods and services as well as the production of U.S. multinational corporations (MNCs) within the EC boundaries by 1992 and thereafter.

There is also a cause of concern that if these markets change their character very differently than that of the United States, the U.S. multinationals in Europe, as well as in America will have difficulty in understanding and making through in the EC markets, in competing there, and in winning contracts in the EC region.

## 2.8. Goals of The Single Act.

In general, the Single Act has been designed to :

- enable a true integration of the economies
- focus the attention of both government and industry towards this need
- harmonize as much as possible the standards of products and services offered
- eliminate the costly delays in borders and customs
- change the rules of the game of competition and thereby bring reforms that had industry-wide effects.

All this was done with a political will but much of the integration has to be designed in-keeping with the :

- international changes (like globalization) in view
- economies and their integrationist effects in the member states
- perspectives of the industrialists and the nations involved, and
- companies and their competitive strategies, etc.

It was assumed that once the high level benefits would be apparent to the governments and the industry in general, these would transcend automatically to the lower/local levels and be naturally accepted at the company level. As we will see in the next chapter, this has not necessarily happened fully in many areas, particularly in the Financial Services Industry (FSI).

## 2.9. An Action Model.

The objective of the Cecchini report was *not only* to highlight the cost of fragmentation and the effect this had on EC's competitive position, *but also* to suggest certain immediate actions that would at least stop this loss from recurring, if not reverse the effects. Cecchini suggested four important measures :

1. abolition of frontier controls
2. liberation of financial services
3. non-biased public procurement contracts
4. supply side effects resulting from actions taken by a firm facing increased competition, thereby producing better quality

The report concluded that with these postulates :

- costs would go down
- prices would (subsequently) go down
- investment would rise
- competitiveness would increase

Additionally, the duplication of R&D and the individual standards of leading member states would not obstruct development of the community as an entity.

Cecchini's identification of losses to the Community can be classified into three :

- **Physical** (due to stringent custom regulations) :
  - Frontier controls
  - Veterinary and plant controls
  - Control of individuals, including custom posts.
  
- **Fiscal** (related to the flow of capital)
  - Differences in value-added tax rates and the goods to which they apply
  - Difference in the rate of excise duties and the goods to which these apply
  
- **Technical** (related to R&D, environment, safety, etc.)
  - Discretionary public procurement
  - Standards and regulations of each nation-state
  - Restriction on financial services
  - Restriction on transportation services
  - Restriction on the movement of individuals and of professionals
  - Restrictions on new technologies and their exploitation
  - Capital controls
  - Difference in regulations, company laws, intellectual and industrial property law, tax law, etc.

It was also highlighted that the federal American model alone neither work best nor quickly enough for the integration of the EC to take place by 1992. The main reason cited was that the American economy provided a minutely planned-out structural framework based on regulations promoting the sale of

goods and services produced in one state to the other 49 states without any barriers. In the case of the EC, there is **also** the need to *fairly* approximate taxes that vary dramatically. Also, providing real-time financial services to facilitate the purchase and movement of goods/services across member states would be necessary if the 'EC market' was to become fully customer and service oriented.

A macro-economic model (based on the goals mentioned in Section 2.8, and in-keeping with the losses classified above), provides rough range of figures that substantiate the action of unification. The model suggests that in a free trade region, the GDP of Europe should increase by up to 7%. Employment should increase by up to 4 million. *Consumer prices should fall* by up to 6%, and the trade balance of the EC countries should increase by 1% of its Gross Domestic Product. The wide price spreads in the financial markets would also gradually narrow. Different regulations in the EC countries for mergers, acquisitions, restructuring, etc., need be harmonized, and unification in fact could be nothing else but beneficial to both the EC countries as well as those that they trade with.

### **2.10. Bureaucracy's Successful Role.**

The review of 1985 activities, the commissioning of the Cecchini Report, The Single Act of 1986, etc. – all were ushered through bureaucratic channels and became great political success. The Commission kept on perseveringly trying to bring the above messages to important decision-makers in Europe and to the common man across the heterogeneous communities of the EC.

The success is also because of the fact that these proposals, reports, and actions are :

- neutral in their verbiage
- make sense to public and appeal in general
- difficult to disagree on their visions
- promising within achievable levels

The determination, sincerity, and supportiveness of the unusual bureaucracy in the CEC has played a very quiet, but decisive role in bringing all the convergences. And the Commission will be equally, if not more, instrumental in helping this process be completed by the end of 1992.

For example, in many cases, even though the directives are neutral, the Commission will need to sit with the related (or affected) industry to translate the relevant directives into operational plans that the industry can effectively carry out in the very limited time-span now remaining for the first-order unification. In the case of Financial Services Industry (as we shall see in Chapter 3), the need to set-up the link-pin strategies and related technology standards – not to impose or dictate – but to facilitate *bridging* of information is becoming ever more clear. The role of CEC here is not necessarily that of a body enacting directives but that of a mentor providing the highest-level forum for appropriate technology deployment.

Let us be reminded of the fact that by the end of 1992, only first-order economic integration would have taken place. Beyond that, higher order economic integration (and social and political integration) will also be required



and would, in fact take longer because of the divergences among the cultures and practices.

### **2.11. Effects of The White Paper.**

Major events and set-ups have started happening. Some 279 directives have been issued by the Commission to all member states for compliance. These constitute a step toward the first order economic integration <sup>3</sup>.

One of the controversial directives was The Second Banking Directive. Another was the freeing of capital movements. Yet another was the increased competition in public works and supply contracts. We will discuss The Second Banking Coordination Directive in Chapter 3.

### **2.12. Organization of EC.**

There are five main bodies that together constitute the EC government and monitoring. We briefly visit each type here.

#### **2.12.1. The Commission:**

This is an executive organ that initiates legislation, issues regulations and directives, and has a staff of career personnel of around 10,000 in total to enable it

---

<sup>3</sup> Around 300 proposals were made in 1988, of which 279 were accepted. In 1989, 108 were fully agreed upon as there was no controversy. Others were discussed and modified to get general agreement.

to function. The executives are 17 members, based in Brussels. There are nine official working languages of the Commission. The Commission also is a kind of monitoring agency and administer the funds of the EC.

### **2.12.2. The Council of Ministers:**

This is the supreme decision-making body because it gets all the complaints, proposals, and proceedings from each of the other bodies as well as from the general public and corporate world whenever there is a problem. It consists of politicians who represent the 12 countries and who have been selected by *qualified majority voting* dependent upon the population of the member states. Therefore, France, Germany, Italy and the UK have ten numbers each; Spain has eight ministers; Belgium, Greece, Holland and Portugal have five each; Denmark and Ireland have three each; and Luxembourg has two ministers. So the total number of minister is 76.

In rotation, the president of the Council serves a six month term and chairs the Head of State meetings. This way each government gets the opportunity to preside for six months, which is a short period but reasonable enough when considering that 12 countries need to get an opportunity each for presidentship within span of six years.

### **2.12.3. The Parliament:**

The Parliament is like the U.S. Congress – the public representation and participation at the EC level. It consists of 518 representatives from the member states and has around 3,000 officials serving on its staff. It is elected every five

years by universal suffrage. It has all the traditional roles like those of the Congress, in that it can accept or reject a budget, it can dismiss the Commission by two thirds majority, it can alter legislation passed by the Council, and it has power to do all kinds of investigations into the affairs of the Commission as well as the Council of Ministers. It is based in Luxembourg.

#### **2.12.4. The Court of Justice:**

This body is like a Supreme Court. It consists of 13 Judges, 6 Advocates, and 6 Advocates-General. It helps make and check the observance of community law. Therefore, it is responsible for interpreting law, judging its compliance, and taking to task the noncompliance.

It has all the other traditional functions of court rulings, passing judgments, and taking legal decisions. This is also based in Luxembourg. For the time being, the Court of Justice has not been empowered to pass verdict on taxation, on the right of the individuals, and on employment matters because these have been left to the realm of the Council of Ministers.

#### **2.12.5. The Court of Auditors:**

This body is a specialized group of auditors who have the right and privilege to look into the books of the member states and to do all audit related work.

### 2.13. Some Observations on the EC Structure.

What is interesting is that the five bodies are seated in two different countries (Belgium and Luxembourg). They have different terms of offices. Even though they have similarities with large national governments (like those in the United States), and also have distribution of responsibilities among them, what is interesting to note is that :

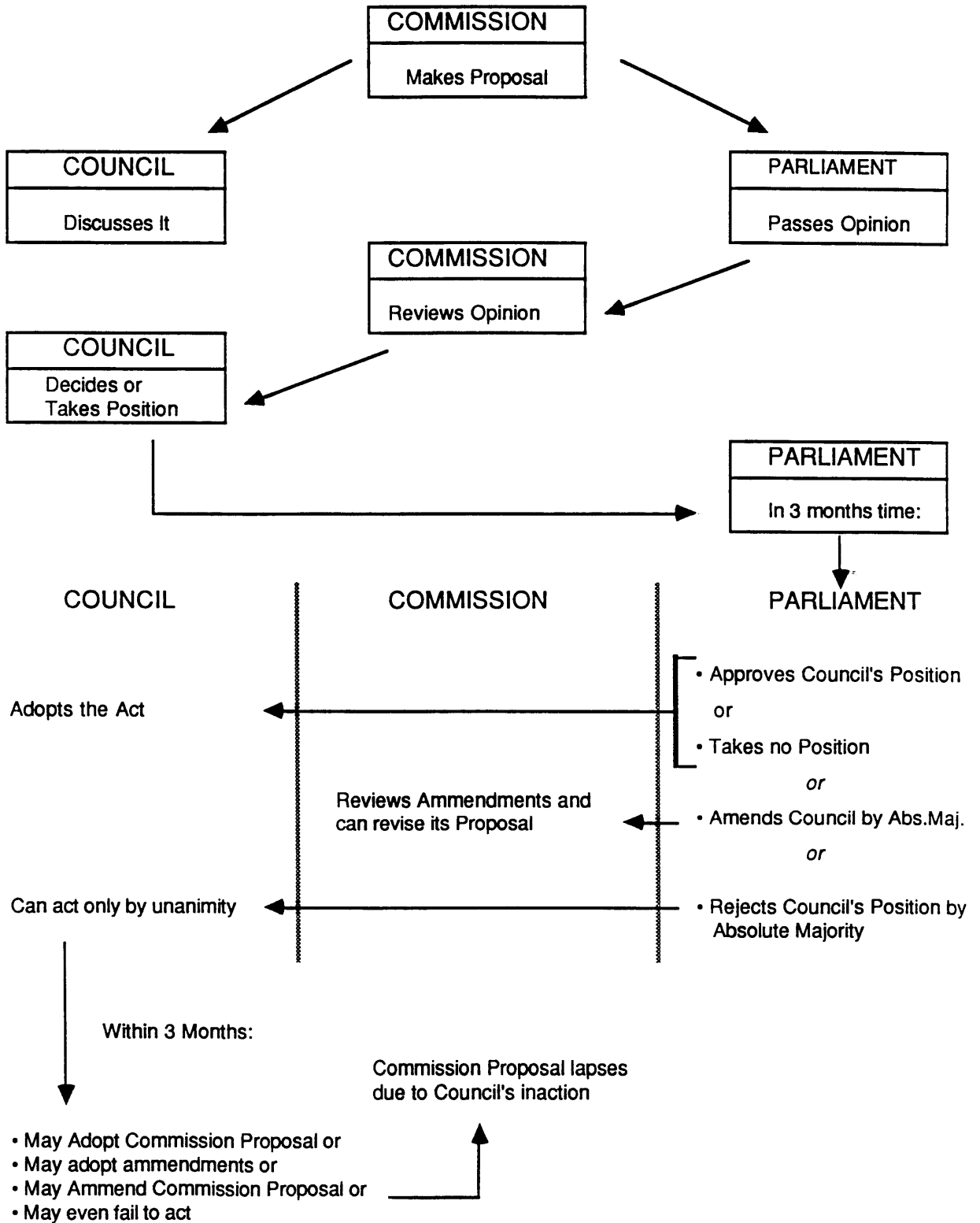
- there can be considerable time lag in the passing of information among these bodies
- certain rights which normally go to the Parliament and the courts have been set aside for the Council
- Auditors need to include people at the systems level and other newer professions (not only accounts and books)
- the traditional national politicians (which includes socialists, liberals, conservatives, etc.) need to develop a more Pan-European approach rather than specific local ideological concepts only <sup>5</sup>.

The process of decision-making in the EC, based on the existence of these five bodies and their interaction of responsibilities, is shown in Figure 2.2 on the following page. It should clarify how these roles are actually executed, particularly with regard to decision making. There is only one impending problem which we would like to highlight here; that is of the time delay in the

---

<sup>5</sup> Not to see a parochial view and try to formulate majority of one type of Parliament as against another, but to see beyond partisan and ideological ranks.

Figure 2.2: The Organization and Decision Process within EC.



transfer of information from one level to the next and of the feedback process involved.

## **2.14. Internal Market versus Fortress Europe.**

Two concerns regarding 1992 are emerging. One is positive; that of a free trade region. The other concern is that of a closed Europe, typically termed *Fortress Europe*. Depending upon the way that the EC will emerge *beyond* 1992, much will be characterized and become clear at that point in time.

### **2.14.1. Internal Market.**

The liberal view of a free trade region is essentially one that reinforces the internal market and disqualifies negative feelings among EC competitors and allies. It is the one that Jacques Delors is actively promoting and re-iterated in his address at Harvard University <sup>3</sup>. He stresses the fact that Europe has always needed this consolidation and that, because the consolidation has spun off late in an era of free markets among the continents, it seems difficult to reconcile with. The very idea of competition is also stressed by the free trade region proponents and they view it, in fact, as a necessity to compete with the United States and the Asia-Pacific region. Additionally, they believe that a common European currency, homogenization of working conditions, juxtaposition of goods and other items (like common currency, central bank, taxation, working rights, etc.), and elimination of regional disparities, etc., are some of the major issues to be

---

<sup>3</sup> Ibid.

addressed in this unification rather than in combatting the competitors outside EC.

In fact, the commercial aspect of 1992 as viewed by this group is that it will insure a more fair competition by a greatly harmonized industrial policy of the region, and that there will be minimal intervention in the market mechanisms – that the market really is expanded to a community, not to a nation or state therein. The resignation of Mrs. Margaret Thatcher in the UK reinforces the fact that unification is well underway even in the minds of the British now, who have been relatively unconnected to the European Community for quite sometime now.

#### **2.14.2. Fortress Europe.**

In contrast, there is also a view (mostly held by outsiders, typically the Japanese) that the 1992 unification actually will produce a fortress within Europe. Precisely because the size of the market (350 million) is so large that it can sustain its own internal trade and industry, there is growing fear that this may become a trading bloc and will come in the way of existing trade with rest of the world. To take the case of the United States alone, as indicated by figures above, there will be a displacement of at least 40 percent of exports by the United States if Fortress Europe indeed materializes as the concept behind unification of Europe. This concept is very parochial, protectionist, and against the spirit of free-market competition.

This could only become evident if the regulations and standard practices required become more aligned to the convenience of the EC-based companies, if

there are more economic actions like anti-dumping duties, and if the EC calls for rules of reciprocity to be established with other countries (which means matching like for like by outside-EC countries). This in turn implies that the spirit of the internal market would be extended to a cohesive and united *common hard-line action* against all outsiders. In the Financial Services Industry, for example, this could mean serious consequences for U.S. banks in Europe (for example, Citicorp, Chase Manhattan, Salomon Brothers, etc.) who will have a very difficult period to go beyond 1992 firstly in guessing what policies to adopt and, secondly, in ending up as losers.

They will have to prepare to move out of the region or become so innovative and so differentiated in the EC market that they would be absolutely necessary there. Again, depending upon how fast the EC internal industry can catch up with any such innovations as may come forth from the U.S. multinationals financial firms established in the EC, there is only a question of *time* as to how much profits can be gained through innovation and marketing, should the EC have a fortress attitude in the long run.

The view of Fortress Europe, could in fact be pushed by the European Communities' member states themselves, in case they feel that the cost of upholding and bringing along the less developed portions of the Community (for example, Greece, Spain, Portugal, etc.) is prohibitive otherwise. If this cost is so high that they have to balance subsidization and uplifting of developing regions, they will naturally enforce barriers to trade on the rest of the world to make internal glory a greater success. The Socialist factions in the EC are more likely to take this view, should a 'complete' unification and harmonization not



result by 1992. The recent election of the new French Prime Minister (and particularly her anti-Japanese stance on trade) is likely to project this image.

### **2.15. Financial Services Industry.**

Directives related to the Financial Services Industry (FSI) were debated because of the currency rates, lack of understanding about how capital would flow, where it would eventually end up, who would be the ultimate beneficiaries, and other structural questions that crept into the minds of financial decision-makers. As we will cover in Chapter 3, these FSI directives were gradually modified – after suggestions were received from various member states. These have now *all* been enacted for 1992.

### **2.16. Unification of Standards.**

An important facet of the unification of EC is the process of unifying standards of goods and processes. Two possibilities have been discussed in the EC debates. One was that of mutual **recognition**. The other one was **harmonization**.

*Mutual recognition* means that standards, testing, and certification would be done by each country according to its previous practices. These would be respected by the other member states; they would exchange goods and services without bias of each others' standards. It would be a kind of reciprocal recognition.

*Harmonization*, on the other hand, implies that technical standards and regulations would be standardized across the EC region so that production in different parts of the EC would be on *similar* bases and live up to the agreed *minimal* technical specifications. Differentiation would only be caused through additional value-adding <sup>4</sup> in the final stages of production and/or service.

The former method is the most convenient, but defeats the whole purpose of integration of the EC region as it would provide no common-link or no similarity of any kind across the Community. The latter method raises several issues. For example :

- issues of regional disparities (developed versus developing portions of Europe)
- loss of internal investment
- general fluctuation in standards

As we can infer, the process of mutual recognition, to a manager, would imply a decentralized and autonomous approach to organizing things.

On the other hand, harmonization to a manager would imply standardizing products, processes, methods, and procedures – and centralizing *some of the* activities at some point. Both are extremes that cannot be readily achieved in the short time-span of 1992.

---

<sup>4</sup> Each nation would be free to create any additional value *beyond* the minimal standards.

## 2.17. Hybridization for Subsidiarity.

The author has researched into President Jacques Delors's suggestion of using *the principle of subsidiarity*<sup>4</sup> because this principle – in the author's analysis – provides for **varying degrees of hybridization** of systems in the services industry. It caters to the requirements of all types of technologies that are basically very heterogeneous and yet need to converge (or pass along information) for managerial action at all levels in an industry.

Subsidiarity – an old Christianity principle – implies a balanced mix of standardization at the center, and autonomy at the local level, depending upon how much a locale are willing to accept from the center.

In terms of 1992, the value adding and managerial change that a locale is willing to accommodate will accordingly depend upon both, the detailed rules at the center as well as the *degree* to which these locales will mix their own generic values in the process. This implies two important consequences for management and government :

1. The standards will still be different across the region even while meeting the minimal requirements of the Commission

---

<sup>4</sup> President Delors: "Knowing how to go about something is often just as important as knowing what you want to do. We therefore needed a method to keep the machinery of integration working. At the basis of this method is the principle of **subsidiarity**, according to which no decisions or actions should be taken at a more central level than is strictly necessary. The Community will not take over what can be done at national, regional, or local level. This makes sense in terms of *efficiency*. It avoids the creation of a large central bureaucracy. It is also in tune with current business and political practices." Harvard University, 09/22/89.

2. The accommodation of value-additions and alterations due to diverse locale will need to eventually converge to a *full* standard in each place to promote its industrial practice

An important lesson for the Financial Services Industry (FSI) therefore would be to adopt a *hybridized* approach. *Hybridization is a dynamic mixing of centralization (for standards-setting) and of decentralization (for controlling local practices) within its value-adding capacities.*

This is more difficult than harmonization or recognition/reciprocation because it combines the two in *varying* degrees for each nation within the region, and for the region as a whole. It makes difficult the process of organizing for competitive advantage in the EC, while providing each and every player within the economies an equal opportunity to test its strategy for 1992.

Subsidiarity and consequential hybridization for the reorganization of industry will be a difficult mandate for all the decision-making bodies of the EC. It will be necessary for each of these bodies to uphold and support subsidiarity after first understanding it fully themselves and taking any possible advantage to create innovations in this process.

Therefore, as we understand it, only the large and financially strong organizations are able to make their way around and, in the process, even take minor shocks and losses while encountering various degrees of hybridization, whereas the smaller members of the Financial Services Industry may not be able to experiment in a hybridized approach. More on this in Chapter 3.

## 2.18. Countering Forces.

While macro-level unification is being discussed and gradually implemented as 1992 draws near, several factors are opposing or countering this unification at the micro level. This is seen in all industries (not excluding the Financial Services Industry), which are experiencing the need for newer products, wider geographies, and diverse market types. In particular, the ability to organize and structure a company to reap benefits in a subsidiarity mode, is a difficult task for organizations that have been living under protectionism of their governments thus far.

The major opposing force is in fact the problem of organizing in a hybrid way to achieve three-pronged objectives :

- being nearer the customer (i.e., decentralized);
- bringing innovation (i.e., new products and services in *different* geographies); and
- simultaneously keeping things in control (i.e., being centralized and *closely-coupled*)

It is difficult to manage all these concurrently. A situation is arising where in many ways, the different theories of international management are being defied. Models of corporate practice in the US may not be very helpful because of the nature of integration of heterogeneous EC cultures as against a more or a less monolithic one in the U.S. (at least at the economic level).

Another factor opposing the integration would be differences among cultures, among locales, among languages, among products desired, etc. Such differences are issues of personal choices and sensitivities and will need time to grapple with. Which side is stronger and which attitude eventually takes place beyond 1992 will depend upon which forces (enabling or disabling) will eventually prevail. An important lesson for organizations in the FSI is to remove the uncertainty gradually by *proactively designing products and services and reaching parts of the geographies to satisfy the large number of customers*, i.e., reorganize and restructure in a hybrid manner and make diligent strategies to achieve this. Information technologies, as will be discussed in Chapter 6, can be instrumental in the selection and implementation of such strategies.

The fact that the directives issued by CEC are neutral and therefore are acceptable to all the 12 communities in general, they can – depending upon whether there is a joint or segregated approach to database integration – both impede or hasten the approach towards hybridization. Because these neutral directives can be interpreted by the 12 communities in their own respective ways, and because they are free to implement technology according to their understanding of the directives, there may be (in fact, as the author found, there are) different standards emerging at the same time.

Needless to say that convenient standards to one region may be pushed by that region as being the best and being advocated for adoption. There is a genuine need, therefore, for the commission to widen the scope of its Director General 13 (or create a new Directorate General) for helping the industry and the governments to jointly set standards for data communications and database sharing.

The standards need to be arrived at jointly and the diversions from standards to incorporate localization also need to be spelled out in a common forum, so that the real benefit of technologies from one region to another, and of businesses from one region to another, can be shared effectively. Our research into the directives of the commission, the visit to Brussels and the visit to the various banks showed that there were indeed different standards being pursued and the focusing effort leading to a common direction that would enable the heterogeneous systems to be integrated across the communities is not really underway.

One reason for this may be that, because composite information systems is a new idea, it has not yet taken root into the communities and is therefore not being explored as a viable option in the near future. Research into this can be done, which was beyond the scope of this thesis, to focus in on the exact needs of the banks and to pick up a specific problem and go into depth with the commission, the governments involved, and the various locations of any representative bank.

The method for adopting a standard across boundaries may not necessarily be on the basis of majority voting or convenience of one subregion versus another. A possibility is that Europe -- being rich in telecommunications technology as it is -- needs to explore which systems would be the CEC, the governments, and the majority of the financial service industry be able to support in the short-run as well as the long-run. Thereafter, the DG needs to investigate as to which subregions have the technology available and therefore who should be assigned the development of the same on a regional basis.

Additionally, there may be specific requirements in areas where business is very heavy (typically, the golden triangle of Paris, London and Frankfurt).

The transaction rates and throughput in these regions are very heavy compared to the other major cities of Europe. Also the linkage of networks with Japan and the United States, stock exchanges and commercial banks needs to be established with the Director General in a way that all 12 governments as well as the leading financial service industries can easily and manageably complete.

### **2.19. Strategic Alliances.**

Four types of consolidations are occurring within organizations – each with its own strategic manner and each is addressing I/T agendas differently to pursue to fulfillment :

- mergers and acquisitions
- strategic alliances of sorts (e.g. joint ventures)
- customer concentration
- increasing concentration

#### **2.19.1. Mergers and Acquisitions.**

The four main aims of mergers and acquisitions are:

- Economic advantages of Scale and Scope
- Marketing advantages of Distribution Channels



- Benefits of sharing New Technology
- Sharing of Financial Costs and Risks

Typically big companies who want to become bigger still and to reach out to different customers and tap the window of opportunity quickly are looking into acquisitions and merging. The non-EC companies want to enter before 1992 so that they are also included among the official “game players” in the EC before they are outlawed through regulations. But mergers and acquisitions are not always the best thing to have. Even though there is a lot of attraction these days in the business about mergers and acquisitions, these have their own costs – hidden costs that can be considerable – that must be evaluated before entering into mergers or acquisitions. More on this in Chapter 3.

#### **2.19.2. Other Alliance of Sorts.**

Strategic alliances can include many forms. Besides joint ventures, which are the second most popular alliance in EC today, there can be constructed other forms to meet the individual needs of an organization or industry. For example, they can be made using concepts from the Product Evolutionary Theory of Paul Krugman. They could include the transnational concepts suggested in *Managing Across Borders* by Bartlett and Ghoshal. They could include trade bloc promotion concepts of Lester Thurow. We will suggest some in Chapter 4.

In all new types of strategic alliances, corporations would need to seek governmental assistance to catalyze the process through standards and policies that the EC can establish and implement across the region. It can use the government for protectionism (for example, ban an import of cars from Japan).

Such alliances would not only bring collective profits in EC-region, they would also help in sharing the costs, sharing experiences, and sharing knowledge among participating organizations. Not as an economic collusion, but as a special formulation, strategic alliances could bring greater economic and social rewards for companies working collectively rather than individually. This seems more likely in light of the fact that the EC based European companies will want to take advantage of the 1992 provisions quickly and try to dislodge the large market shares taken by their competitors from the U.S. and Japan.

### **2.19.3. Customer Concentration.**

Customer concentration is an effort for consolidation of clients and of suppliers. There is likelihood of vertical integration among the different players in an industry in order to get customers satisfied better and faster.

### **2.19.4. Increased Concentration.**

Increased concentration would imply that an organization would structure itself to achieve scale economies only and would strive to always become bigger. This process of expansion and growth is much catalyzed now by companies pursuing unique niche markets created by 1992.

## **2.20. New Types of Managers Needed.**

Organizations using the opportunities of 1992 and considering various types of alliances would stand to gain more than those that will rigidly structure

themselves in a traditional way and manufacture only conventional products on similar lines produced so far.

The final marketing decisions could be centralized in a regional/central office but distribution decisions, sales and services, customer relationships, and client availability, etc. would need to be localized. Indirectly, it implies that paperwork could be handled by IT as a back office in a central location. But specified schedules will need be drawn with the help of local managers for such a central management of distributed tasks.

In order to handle markets *beyond* national boundaries in a non-traditional manner across the entire region, more general-manager types would be required than locally experienced ones or functional specialists as more creative thinking with a higher-order, regional interest would be at hand instead of local biases or myopic foci.

Cross-border shopping will also increase, so European retail expansion in border towns will take place. The pressure to harmonize retail operating hours as well as round the clock banking hours will increase. Higher gross margins among highly concentrated industries will cause spending on marketing communications to increase. Similarly, larger marketing and more density, especially in more dense populations, will need more impersonal contact because personal contact may not be possible. So IT, properly established in the infrastructure of the EC, will play a vital role in providing information and bringing faster results to the customer.

## 2.21. Conclusion.

We have seen that there is an irreversible change taking place among the 12 nations of the EC. The 1992 unification is imminent. The shape and form, its market stake thereafter, depend largely on the structures they develop *now* to tap the window of opportunity by the end of 1992. Depending upon how well these member states have met the responses of the customers and the needs for change, Europe can either become an excellent region in the world of markets to trade with *or* become a fortress that is self-sufficient in its own and depriving the world of free trade with it.

Managers and policy makers in the EC countries have to diligently develop structures for their organizations that can meet both the needs of the locale as well as a strong common binding concept on a regional basis. Decentralizing to be near the customer and address newer needs of products while also centralizing at the regional level to understand the different market segments and their demographics, while promoting quicker and faster deliveries of goods and services, is the challenge for the managers and policy makers in the EC countries. Paolo Cecchini, Jacques Delors, Jean Monet, and Pierre Ury and the like have provided the vision and the hard work to lead this historic unification effort of peace time.

Now it is up to the creativity of the managers and the sincerity of the policy-makers to jointly design and implement organizational structures, products, and attitudes that will bring these diverse cultures and markets to converge effectively.

## CHAPTER 3

### EMERGENCE OF A FINANCIAL SERVICES INDUSTRY

#### 3.1. The Creation of an Environment.

The Single European Act of 1987 described in the previous chapter supported the removal of physical, technical, and fiscal barriers, tariff and non-tariff barriers, and provides for general mobility of capital, people, goods, and services.

Out of the 279 directives issued by the Commission of the European Communities (CEC), around 25 deal with capital and financial services. As such, with the possibility of offering multiple products across unrestricted regions, banks and other financial firms are fusing into a new industry. These financial service related directives can be classified in to six categories, each evolving over a different time period :

##### **3.1.1. First Banking Directive:**

In 1977, the First Banking Coordination Directive was issued. This directive encouraged the establishment of *common standards* for issuing a banking license. It also delineated the authority of the home country (or the base country) as well as the host country, and set rules for the interconnection between the headquarters and its branches throughout the EC region.

### **3.1.2. Second Banking Directive:**

In 1989, the Second Banking Coordination Directive was promulgated. It was more effective than the first directive in that :

- it was not simply an encouraging or *methods setting* directive, but promoted deregulation
- it reinforced the standardizing of licensing for products and geographies on a single-country basis

The three major tenets of the Second Directive include :

#### **3.1.2.1. Common Licensing:**

Any one bank, offering any one service in one of the EC member states, by virtue of its having license in that state, is able to – without obtaining additional licenses – operate in the other 11 member states.

This has liberalized the banks to operate across the geography of the EC region and bypasses former formalities and bureaucracy of licensing.

#### **3.1.2.2. Mutuality:**

This enables a bank in one member state, while also operating in other states, to be able to offer (as well as acquire) reciprocal services from subsidiaries in those other states.

This means that its subsidiaries in other countries, established without the need of additional licenses, will be able to get the same services as it offers to that country's market.

### **3.1.2.3. Establishment Criterion:**

The Second Directive has set 5 million ECUs as the minimum requirement for establishing a bank in any country inside the EC.

This implies that a bank intending to operate within the EC region will need to have at least 5 million ECUs in its deposits to establish itself as a banking institution.

### **3.1.3. Capital Mobility:**

The permission to allow movement of capital across the EC country borders *but within* the region is going to be of important consequence for the FSI and EC. Since mid-1990, this has already been enforced within the EC region. Contrary to the fear, there has not been massive movement of capital from one country to another.

We believe this is because, first of all, the various banking institutions are still busy organizing and an investor would want to know the policy of banks *clearly* before he invests.

Secondly, one can see that if massive movement is initiated, the investment can very easily be brought back into the same country from where it was taken out without substantial gain in another country because of

harmonization towards the ECU by 1992. So, capital mobility is more of a directive establishing mutual trust in the community rather than one providing significant currency investment opportunities within the EC countries.

There is one bar to this directive, which is that the less developed countries of the EC would not be included in this directive for investment purposes. These countries include Greece, Ireland, Portugal and Spain. Even after 1992, these countries will be covered this way until they are at parity with the rest of EC member states.

#### **3.1.4. Guarantee Programs:**

Each country of the EC has been asked to develop a policy which will guarantee the protection of deposits in various credit institutions that operate with licenses originating from that country. This means that the Commission of Economic Communities wants to have assurances from the government of each member state (acting as a home country) that there is backing and provision by governments for the investors in general.

#### **3.1.5. Harmonization of Rules and Regulations:**

The minimum solvency ratio has been set to 8% for the entire EC region, regardless of financial state and economic condition. Other measures are being studied and will be standardized gradually. It is clear that only the macro-economic indicators (like the financial ratios) can be controlled once there is region-wide information available. But it is not clear if harmonization in all other areas will be so easily possible. Some degree of autonomy will remain.



### 3.1.6. Other Services:

The possibility of extension of services and new products in the future is encouraged by various mixtures of directives relating to the money and monetary matters.

These six major classes of (around 25) directives have led to creating an industry in EC that can deal with money and offer financial services throughout the region. It has no ban on type or range of products. It has freedom of geographic setting and movement. It will be required in newer ways to serve a changing demography of people in Pan-European space. All these directives lead to increasing the scale, scope, size, and success of what happens to be the largest banking market in the world. It has led to what we can call, EC's Financial Services Industry (FSI).

However, there are still not enough of support systems in place which, among the various member countries and its leading financial services institutions, will make sure that the transition happens in a diligent manner. Naturally then, various banks are interpreting and translating these directives in ways that are suitable and convenient to them while living within the legal bounds of these directives (Recall our statement in Chapter 2 that it is the *minimum* standard that every member state has to meet and there is no end or extent to which value can be added beyond that. So, there is no provision per sé of complete standardization of a product or service.

The Information Technology (IT) infrastructure can play a crucial role in helping set strategies to acquire gains through the realization of these directives.

An important technology policy consideration is: *How to transfer the directives into viable policies using sustainable technologies that will make the spirit of these directives come true in the community ?*

Issues like :

- differences in prices and spreads
- divergences in information technology platforms
- disparity of evolutionary stages of information services
- lack of inter-connectability at various levels among these countries  
and their financial institutions

and a host of other support system issues need to be addressed by the banks and other FSI members to maximize their returns from the unification potential.

### **3.2. Threshold of FSI.**

Similar to the United States' pre-deregulatory period, the EC banks have focused traditionally on each of the segments of financing that they have historically fallen under. The Second Banking Coordination Directive now removes these boundaries and provides for a bank to operate in more than one area, while also providing more than one product. Therefore, similar to the U.S., the EC banking community can be considered a subset of the Financial Services Industry (FSI) of the European Communities (EC). Because of the removal of limitations on products as well as the removal of boundaries, the banks will face several challenges in restructuring themselves and in coming up

with different strategies for addressing the newer (community-wide) opportunities now becoming available.

The convergences among banks will define the competition of the future. In the past, three leading countries in Europe had the largest banks because they had the strongest activities. Though the large countries have the largest volume of financial activity, the density of such activity is more distributed and the concentration is higher in the smaller markets. In every case, what we have seen during our research in 1990 is that the protectionism of the past and the nature of distribution of population and economic activity, has brought about oligopolies in the banking industry and protection from individual governments for their 'home-based' banks.

Some of the largest banks of Europe control almost half the EC banking activity within the EC community. The remaining banks control the other half. This disparity clearly shows that the big banks are in a strong position today to drive the economy of the EC in the direction that *they* consider best. Large banks traditionally would like to become larger and small banks will have a difficult time in opposing takeovers and mergers. The larger banks indeed, as my visits and research show, are becoming bigger and are pursuing different strategies for becoming so. The smaller ones, unless they are focusing on niche markets or limited geographies to concentrate on limited customers or improving the products, are doomed. And, in fact, the latter category of banks are feeling the pressures already. For their survival as well as that of the larger banks' expansion, information technology can play a wider role in supplementing the strategy that they desire pursuing. This will be discussed in Chapters 4 and 5.

Because of the structures of the past, protected by the government, there has been a very close tie between the clients and the national banks within the individual countries of EC. For sometime only, will the cultural affiliations hold national customers to their 'original' national banks. This client-organization relationship will sustain only so long as the banks will offer better services at competitive prices after 1992. It takes only a little while for customers to change over once services improve and prices decrease elsewhere.

In general, we have seen most of the large banks that provide 50% of banking products and services in the community, are trying to follow the universal banking strategy, keeping the region in mind rather than the home country or a few countries only. One of the banks that is focusing on single product and sub-regional space is *also* focusing on niche markets that it is long established in and hopes to beat the other larger competing banks in that market.

The largeness of firms may not necessary be an attraction. As a British economist, E.F. Schumacher, wrote in *Small Is Beautiful*, at times of reorganization and of pursuing certain specific advantage, it may be bad to be big. And bigness can be devastating rather than assuring.

A table (taken from The Cecchini Report) on the following page shows a representative sample of prices of financial services in the principal domestic markets of the EC. These principal markets include France, Germany, Italy, Spain and the UK.

**Table: Prices of Financial Services (Ref. The Cecchini Report)**

	France	German y	Italy	Spain	UK
<b>Banking</b>					
Consumer Credit	105	136	N/A	39	121
Credit Cards	-30	60	89	26	16
Mortgages	78	57	-4	118	-20
Letters of Credit	-7	10	59	9	8
FX	56	31	23	196	16
Traveler's Checks	39	-7	22	30	-7
Commercial Loans	-7	6	9	19	46
<b>Securities</b>					
Private Equity	-13	7	-3	65	123
Private Bonds	21	90	-63	217	36
Institutional Equity	-5	69	47	153	-47
Institutional Bonds	57	-4	92	60	N/A
<b>Theoretical Potential</b>					
<b>Price</b>					
<b>Falls</b>					
Banking	25	33	18	34	18
Securities	23	11	33	44	12

Current prices as percentage of average of the four lowest national prices.

### 3.3. The Largest Banking Market.

The banking-related directives are primarily meant to unify the Financial Services Industry in the EC community so that it is greatly facilitated as a trading bloc and its dependence on non-EC countries and their banking organizations is considerably reduced. There are possibly two scenarios of the result of the FSI integration.

First, if EC takes an open competition stance (i.e., free trade region stance), banks in the member states of the EC will have greater competition among banks within the community as well as those of the U.S. and Japan. With the growing aggressive expansion of Japanese banks, it is expected that these will also try to have inroads into the EC countries before 1992. This is very much underway. However, Japanese are at a slight disadvantage in that the American banks had been established well after WWII but the Japanese had some difficulty in making it to Europe in a big way. Whether they can compete in the open market of the EC or not will depend upon the attitude taken by the policy-makers in the EC Financial Services Industry.

Second, if Europe takes the *Fortress* attitude (i.e. a protectionist attitude), it will be a comfortable competition among the internal banks of EC countries and, *real* competition per sé will not take shape. There will be skewed gains for the EC FSI, regardless of how it manages this protected internal competition.

Given the existing differences in prices and spreads of the major EC banks, the competition within the EC for FSI would become fierce. Only in the event that the existing banks go into any kind of alliances with each other will there be

subdued competition. Also, given that there is an ultimate capacity of EC markets, there will need to be fewer banks to offer services at reasonable prices to customers (some statistics will illustrate this point later in the chapter).

As the statistics below clearly show, EC can become the largest banking market in the world in terms of assets, customers, and product potential. The existing international banking statistics among the three major trade blocs (i.e., USA, Japan, and EC) are reproduced here from a Salomon Brothers report :

	<u>USA</u>	<u>JAPAN</u>	<u>EC</u>
Number of banks	17234	1165	3064
Banking assets (in \$billions)	2732	2616	3835
Number of households (in millions)	89	38	120
Average size of a bank (in \$billions)	0.16	2.25	1.25

#### **3.4. Disparities Inside the Community.**

The EC banks constitute 41% of the world's top 500 banks. U.S. banks account for only 21%. Japanese and other Asian banks account for 26%. Remaining 12% are the rest-of-the-world and Third-World banks.

One of the conclusions of The Cecchini Report was that there are considerable divergences in terms of the price differences of banking services (ranging from 10 to 40%), depending upon the country of the EC. Obviously, this large spread will be narrowed to a reasonable figure that a unified market will be able to sustain. The price differences thus far have been sustained due to :

- high spread
- different approaches to pricing
- different costs underlying these services in various areas
- differences in efficiency and managerial effectiveness in each of these areas
- various non-price related conditions

In the past, banking profitability in Europe has also been exceptionally high. This had been the case due to :

- backing by individual governments
- their biased allocation of contracts
- lack of sufficient competition within each of the 12 members
- strong individual and collective growth of Europe in general ever since WWII

Another important factor are the excellent markets and clients of the Europeans in Africa and Asia and other developing countries that have brought them good profits and sustained clientele, etc.

### **3.5. Concentration of Banking Activities.**

The largest three economies of the EC, i.e., France, Germany, and the UK, constitute the *Golden Triangle* that are the primary movers of the EC economy. In these three countries together, there is more banking, trading, and commercial and investment activity than in the rest of the community combined. Therefore,



these three countries will be the primary strategy setters for banking strategies (mergers, acquisitions, strategic alliances, concentration, expansion, etc.). Together, they constitute around 80% of the European banking assets as well. It is the EC wide concern that the Golden Triangle of Paris, Hamburg and London does not dominate them, that banking activity is disbursed throughout the community, and that the density of banking activity also is somewhat uniformly distributed.

### **3.6. Current Status.**

#### **3.6.1. Existing Banking Types:**

The types of banking activities that have been going on before the recent banking directives were promulgated by the EC include the following :

1. Universal banking (i.e., a wide range of banking activities)
2. Retail banking
3. Savings bank (basically consumer oriented)
4. Investment banks (focusing on special brokerage, asset management corporate financing, etc.)
5. Merchant banking (i.e., wholesale banking, with some retail operation)
6. Mortgage banking (special loans, unions, cooperatives, etc.)

### **3.6.2. Existing Products and Services:**

The major services that are being offered by current banks of the EC include :

1. Lending
2. Deposit taking
3. Finance leasing
4. Brokering
5. Administering payments
6. Transmission services
7. Global custodial service
8. Portfolio management
9. Share issuing and underwriting
10. Trading of securities and derivative products
11. Dealing with foreign exchange issues
12. Safekeeping of securities, etc.

### **3.6.3. Non-Existing Products and Services:**

We can note from the list in Section 3.6.2 that existing services do not include three major (new) products. These are now being considered subsequent to the issuance of Second Banking Coordination Directive. They are :

1. Issuing of commercial paper
2. Setting up of mutual funds

### 3. Dealing with credit and credit services

#### **3.7. Strategic Alliances.**

##### **3.7.1. Mergers and Acquisitions Underway.**

Several strategic alliances are underway in the EC sheerly due to the “1992-effect.” An excellent account by Paolo Garella shows the mergers and acquisitions and joint ventures that have been going on since the early 1980s. It provides statistics on the banking community also. These statistics have been reproduced on the following two pages. Garella’s research shows that the acquisitions and mergers in the recent years in EC countries have reached unprecedented peaks. It also shows that while large companies have become larger, the smaller firms have also accelerated their reorganization through acquisitions. It points out that the intra-community mergers, though fewer than national mergers, are gradually taking on force throughout the EC.

Mergers are being motivated for different reasons, ranging from realizing scale economies to providing strategic competitive advantage through vertically integrated firms. Some organizations are pursuing these objectives. In many others what persists simultaneously is the traditional style of managers instead a new managerial style. So, occupation prospects may not be very different – mergers are more likely reinforcing occupational trends that have existed for long and not being changed to meet the new demands of management. Subsidiarity is not really practiced as the rule of the game in reality!

NATIONAL, COMMUNITY AND INTERNATIONAL MERGERS (A),  
 ACQUISITIONS OF MINORITY HOLDINGS (B),  
 JOINT VENTURES (C) IN THE EUROPEAN COMMUNITY  
 FOR THE YEARS 1986 AND 1987

	National			EC or EC Regional			International			TOTAL		
	A	B	C	A	B	C	A	B	C	A	B	C
Industry	211	84	29	75	21	16	17	12	45	303	117	90
Distribution	14	7	3	5	3	1	4	1	1	49	11	5
Banking	22	11	18	3	9	5	10	13	1	35	33	24
Insurance	17	5	1	7	1	1	4	5	0	28	11	2
TOTAL	290	107	51	90	34	23	35	31	47	415	172	121

PROPORTIONS OF INTERNATIONAL AND EC OPERATIONS FOR THE DATA OF TABLE 1

	<u>Industry</u>	<u>Distribution</u>	<u>Banking</u>	<u>Insurance</u>
Mergers	30%	19%	27%	30%
Minority Holdings	28%	28%	50%	50%
Joint Ventures	66%	40%	20%	50%

Garella concluded that the political and legal environments being promoted through directives in the EC these days affect the extent and dynamism of merger movements. The experiment into mergers at the EC level has shown that many bad mergers have come about, because the controls have not been as strict as they were prior to the mergers.

In our research, we found that two large banks that had merged were having significant problems in their back-office synergies. The attraction of merger being over, the reality has taken its toll. Our conclusion is that mergers and acquisitions – though popular – need to be carefully evaluated before being entered into. It can create a nightmare after the merger.

An excellent account (doctoral thesis at the Harvard Business School <sup>1</sup>), provides another insight into mergers and acquisitions. Professor Linder states that ". . . bank executives had clear objectives for I/T integration and strong ideas about how the process should work. Reality differed dramatically from this ideal view. In most cases, integration was not a rational process; it was a contest for control fueled by habitual practices and political motivations. . . . Because bankers were absolutely unanimous in their view that systems should be consolidated, I/T provided a place to start in the overall process of bridging organizations together. The outcome of the process – a common I/T infrastructure – was the foundation for a single view of the corporation. I/T was the fulcrum for change." Professor Linder also shows how difficulty of integration causes mergers and acquisitions to not necessarily be successful in every situation.

---

<sup>1</sup> Linder, Jane C.: "Integrating Organizations where Information Technology Matters." 1989.

### 3.7.2. Other Strategic Alliances.

Cost Reduction as a policy to gain competitive advantage over others, can be realized through a common branch network for a bank. In other words, if a bank streamlines all its branches and networks them electronically, it is possible to save costs through timely transfer of information across the entire bank. But the questions are: Can a *common* network be spread to *all* areas equally? and Will all automation equipment linked this way be uniform?

Our research in EC FSI show that though such automation may be possible, currently the available technologies and their heterogeneous nature are denying them this connectivity at higher levels (the logical, organizational, and strategic levels) described in Chapter 6.

The objective of creating a mass image and attracting customers through the perception of a large size was typically seen through the merger of two other large banks that intend to add value across their services. Having merged, they now realize that synergistic effects are costing more than delivering and may, in fact, be a hitch in this process that they originally conceived to be as a helpful one.

The option of sharing systems to share costs between participants, within Europe, also seems to be ruling out itself. This is also creating connectivity problems. In fact, within the same organization, it is difficult to have full connectivity. The question of extending it to other organizations does not arise in such morbid situations. More on this in Chapters 4 and 5.

### **3.7.3. Regional Options:**

Two types of *extreme* strategies are being followed in general :

- becoming fully regional (taking the 'plunge' for 1992)
- remaining mostly national (and expanding gradually)

In between these extremes, are other possibilities of sub-regionalizing that we will discuss in Chapter 4.

### **3.7.4. Product Options:**

Again, there are two extreme types :

- becoming a universal bank (providing every product/service)
- remaining a niché bank (remaining selective on offerings)

Also in-between these extremes are the continuum of product-mix choices. Again, we will see some interesting combinations in Chapters 4 and 5.

### **3.7.5. Combinations Possible.**

The mixes could accordingly be many in number. In reality, there would be five main categories :



- Regional banks with niche product
- Regional banks with two or more products
- Localized banks with niche product
- Localized bank with two or more products
- Global banks with universal products

A truly global role can also envisaged for the banks in the last category that will maintain their positions beyond 1992. But first the test of 1992+ has to be faired by these banks. Growth to global could follow through a logically consistent path and will not be a jump (step-function). Even if markets existed, technological limitations and constraints would not enable a discontinuous move to another level.

### **3.8. Role of Information Technology.**

An important thing to note is that infrastructure will play a fundamental role in allowing an organization to take one type of strategy versus another. Information Technology is an important part of the infrastructure. It can be an enabler or a disabler for following any one or combination of the product and geographic options of Sections 3.9 and 3.10.

For example, there could result a give-and-take between products and geographies. Once a bank decides to become truly Pan-European (i.e., Regional bank) and begins expanding in geography, it may realize that it has to concentrate on only a few products that are on-line with their databases. Too many products

being transacted through existing database management systems may be a limit on their capacity planning.

Similarly, a bank with a universal-product attitude may discover that expansion to the full geography of Pan-Europe may not be possible by 1992 because each product group necessarily needs to be transacted through the database at a set rate. Without sufficient technology in place, the dual objective of regional geography and universal products may not necessarily be achievable – and may not be the wisest of choices.

Through a study, it is not difficult to establish the density of banking activity in the various regions of Europe and therefore, the mix of products and geographies that could become the scenario for 1992. But what is difficult is that, with the mobility of capital and people across borders, these may not remain static density and activity figures. Over a period of time, as investment opportunities and business growth changes in the various areas of the EC region, capital will flow and financial support needs will arise. Demographics will keep changing. So also will Information Technology (and other infrastructures) be required to adapt to the changing strategies. However, a general direction can (and should) be established for the I/T deployment. These will be examined in Chapter 4 further.

Seeing the broader scope of the financial services industry – besides the consumer banking area in which most of our study for this thesis was based – we also studied the securities trading that FSI members do on behalf of their clients. Because the world is moving towards electronic, around-the-clock, and around-the-globe securities trading, new challenges are coming out that require efforts to

maintain efficiency and fairness and to meet the needs of domestic and foreign investors.

The ability of the EC to compete in the foreign markets in the new mode as a region is going to become a very critical issue. The regulatory structure that the EC brings about will have to maintain and protect essential domestic policy objectives within the nations as well as within the region as a whole. The regulatory structure designed for yesterday and today's markets and assets as it exists in the EC may not be sufficient. The private sector itself may not be able to achieve without assistance from CEC the necessary adjustments to keep its regional market strong and competitive and to protect its future in the newer, evolving FSI.

Securities markets get created by the exchange of information -- bids, offers, orders, and prices. And the efficiency of the technology used to send and receive information shapes the market's structure and operation. Increase in speed and control over the direction of information flow means that large profits or losses can occur in the securities markets.

The obvious advantage of better technology has always helped overcome inertia, tradition, and cost of bringing information to markets. Eager traders sooner or later seek the benefits of advanced technology for themselves and for their customers, either on established markets or by trading outside of those markets. Now I/T is moving to beyond merely routing and transmitting market data and orders, to acting on that information. It can automatically cue and match bids and orders, execute trades, move them through final settlement and

create an audit trail. The security itself can exist only in electronic form, with no printed certificate.

We have not yet achieved the paper-less society even in the most modern economies of the United States and Japan, but we are an almost paper-less bidding and pricing market. Automation of matching bids and orders, executing trades, moving them for final settlement and creating an audit trail are all becoming possible in the United States.

Computers and telecommunications are now used by security markets for trading support systems, including displays and dissemination, order routing, and transaction execution for small orders. They are also used for market surveillance and for monitoring and for back office data processing and clearing and settlement of trades. These functions are automated, in both exchanges and the Over-the-Counter (OTC) market, in such a way to preserve the role of market makers. This can enable investors to get a price between the quotes. It may increase liquidity by attracting skilled professionals whose experience and understanding of floor behavior can make trading highly profitable to them and to their customers.

However, the mixing of manual and automated steps in information processing seldom allows the optimum use of either manual skills or system capabilities, and create greater backlogs and opportunities for addressing information flow. Unless this is also taken under the purview by the CEC, and unless the DG13 (through a widened scope or through an additional DG) addresses these issues with the governments and FSI, such sophisticated usage of

technology may in fact not be possible regardless of the state of technology and the platforms available for such a technology.

There is a genuine need for addressing an agenda by this multi-party group that needs to decide about market surveillance systems, clearing and settlement systems, service vendors, financial news, stock quotations, foreign exchange data, and trying to converge the technological development in such a diversified community as the EC. The role of regulation of information services also falls under this agenda. More on this in Section 3.11.

### **3.9. Disparities due to the Emerging FSI.**

#### **3.9.1. Conflicting Agendas ?**

We have found that the banks had at least two plans for action. One was a short- to mid-term plan that resulted due to the banking directives and the fastly narrowing 1992 window of opportunity. The other was a long-term plan that had been in existence for some time but either does not fall in line with the medium-term plan or has been relegated to the future due to the impending importance of 1992 and the change in agendas owing to diversion in strategy.

As long as the two, i.e., mid-term and the long-term foci, are in line in a natural sequence of technological development, the investment by these banks in IT will reap great benefits and high rewards for them. But for banks which will be *shifting* technological modes now to accommodate the short- to medium-term objective, and then in the future to, for example, become global,

will need to invest twice or more on the shifts in technology and policy. More on this in Chapter 4.

An overall policy design, with considerable roles for the EC directorates, to help harmonize the long-term and medium-term goals, and correctly assess how the regional policies could reinforce local and global policies are very much required now. CIO's of these banks can thus help converting I/T's to their advantage that will determine prudent investments in Information Technology. Additionally, testing and using *tools for transition* like M.I.T. Composite Information Systems Laboratory's Tool Kit should prove to be a cost-effective investment.

### **3.9.2. Costs of Change.**

An important messages in this thesis (detailed in Chapter 6) is that such shifts in technology are expensive, and may even require investments recurrently. Our purpose here is not to discourage future planning by the banks. But our research shows that the 25 or so directives of the EC related to financial services seem to have created, in certain situations, newer agendas that are not necessarily in line with the previously envisaged long-term goals and plans of the banks. While both the short- to medium-term *and* a divergent long-term plan can be pursued, it may be expensive to do both.

Can managers not contain these expenses by setting up an information technology infrastructure that will enable a more uniform and continuum approach to the technology development in their banks? Can EC Directorates

not set-up an I/T policy framework for regional competitive advantage that managers can use to remove any doubts that may exist in its absence?

Certainly this is possible. For a serious manager who wishes to go through the exercise of establishing Critical Success Factors in the long-run and then focusing on the medium and short-run with that vision and EC directives in mind. Whether standardization (and centralization) result from such a project, or whether decentralization (and hybridization) result from it, the process has to be critically evaluated.

In addition, instead of shaping structures to fit into the existing technologies, banking structures should be based on the organizational goals and strategies. Technology should be made to address *these* objectives. Another problem with technology in the FSI in the European Communities is that, in general, it is one-half to one generation behind the U.S. Replacing all systems to match-up with the U.S. may neither be feasible nor cost effective. Within EC, it will be mandatory to try bridging between systems to realizing the physical and logical networking for these regional banks.

### **3.10. A Note on ECU, and Monetary and Economic Union.**

The economic and monetary union will be covered through three stages. These include :

1. Closer coordination on a voluntary basis,

2. A "soft union" with some centralization of monetary authority but no locking of parties, and
3. The final stage of "hard union."

Stages 1 and 2 are really transitional stages and will not be evaluated strictly on their own merits because continuous developments towards the union would require different degrees of *hybridization* for evolution towards a union. Indeed, the Delors Report states, "The Committee agreed that the *creation of an economic and monetary union must be viewed as a single process*. Although this process is set out in stages which guide the progressive movement of the final objective, the decision to enter upon the first stage should be a decision to embark on the entire process."

There are different approaches to economic and monetary union. Either any one EC member state's monetary policy plays a dominant role, or the maintenance of several different policies of each country need to be simultaneously maintained. The latter (scattered) approach will rule out the possibility of fixed exchange rates and also would not necessarily insure competition leading towards monetary stability and greater cohesion between the national policies. Monetary union without economic union is another proposal, but would be too heavy a burden on the monetary policy and would mean that monetary institutions might play a very dominant role internally in the EC.

Yet another approach is the monetary union *with a centralized* economic union, which would entail the transfer in the EC of the principle economic policy instruments necessary for pursuing general objectives of balanced growth



and stability. This approach would not reflect the community's political preferences and is not consistent with the principle of subsidiarity. So the design of a system should realize the economic and monetary union and *develop parallelism* between monetary and economic aspects, and use subsidiarity to allow the diversity of specific situations. The eventual objective of a monetary union should be price stability, and, in light of this priority, the objective of general economic policy is defined at the community level; the monetary system should be given a high degree of independence in relation to national governments and community institutions.

Hence, a central European bank system (or EuroFed) should have a federal structure and comprise both a Council, consisting of 12 governors of the national central banks as well as a central body – a Board – which will be made up of a smaller number of members appointed for their expertise. The Council would determine the direction of monetary policy, while the Board would have the task of overseeing the day-to-day implementation of the common monetary policy.

The ECU is central to such a system, and the manner in which it will be created through initial contributions of international reserves from the central banks would make it a true currency in reality.

This will promote the evolution of a single monetary policy. It is essential to achieve a sufficient degree of consistency through a balance of parallelism and subsidiarity throughout, with the application of three principles of action: impulsion, cooperation, and cohesion. It is of growing importance that information technology be available to integrate across the EC region, the disparate heterogeneous systems that would need to communicate on real-time

basis to provide information about trade activity in the region that is workable in a hybrid situation like this one.

### **3.11. The European Communities Securities Market**<sup>4</sup>

Europe has 39 stock exchanges, as well as some non-centralized or over-the-counter markets and informal, off-exchange trading networks. European stock markets, apart from London's, are not now strong competitors to the major market countries. However, one of the major objectives of the commission of the European community is to create and strengthen the European securities trading arena. Significant progress has been made in harmonizing securities laws and regulations -- i.e., making them similar and more compatible with the goal of achieving effective harmonization by 1992.

There are proposals to establish a European equities exchange network in which a single European list of shares of 300 large European and foreign corporations would be traded, through an inter-market trading system, like the ITS in the United States. On the other hand, the chairman of the International Stock Exchange has proposed that SEAQ-International be the international market place under a joint initiative of the ISE and German Federation of Stock Exchanges based in Frankfurt. The Federation of European Community Stock Exchanges is planning "PIPEII" a network to distribute market data from and

---

<sup>4</sup> Parts of this section have been taken from two sources: Pierce, R., "The Regulation of the Issuance and Trading of Securities in the United States and the European Economic Community, A Comparison," 3 J. Comp. Corp. L&S EC Req. 129, 132-22 (1981), and OTA Background Paper on "Trading Around the Clock," OTA-BP-CIT-66, 1990.

among 12 EC member countries." This could, in time, develop into a trading system.

The EC has a consumer potential that is 1.5 times that of the U.S., and three times that of Japan, but the EC countries do not have a strong tradition of individual investment in securities. Their exchanges are, however, already international. A number of them have recently been deregulated to give broad access to their markets, and some have become ambitious programs of automation. The EC must, therefore, be considered a potential competitor in global securities trading. Of the 12 EC countries, the UK already has about 35 percent of market capitalization. West Germany has about 13 percent, and France nearly 12 percent.

West Germany began in 1989 a screen-based system (IBIS) for displaying market data on major stocks at eight West German exchanges. The Paris Bourse is making significant investment in technology in an effort to strengthen and expand its market share. Other European markets are also being strengthened and are undergoing technological and regulatory changes. Individual ownership of securities is not widespread in Europe.

Even in the UK, which has the most well-developed securities markets, less than 3 percent of households own corporate shares in 1980, compared to about 19 percent the United States, although this increased in the 1980s because of privatization of some British nationalized industries. Probably for this reason, there were no strong customer protection regulations in Europe; most European countries did not mandate full disclosure, prohibit insider trading, or have securities regulatory agencies.

With the privatization of state owned enterprises in several countries, beginning with (the most recent example of East Germany) its national policies for encouraging stock ownership, prudential securities regulation, began to emerge. No comprehensive national securities laws were enacted until recently, under prodding by the Commission of the EC and following several stock market abuses.

The Commission of the EC recognized from its beginning in 1957 that there should be special benefits from the integration of financial services markets, due to the unique pivotal role played by the financial services in catalyzing the economy as a whole. But there was little progress for nearly 30 years.

In 1985 the Commission of the EC issued its White Paper, in which the EC did not seek to establish identical regulatory regimes, but instead prescribed basic essential principles with the requirement of mutual recognition. Regulatory harmony should provide European investors with greater opportunities with portfolio diversification.

Increased prudential regulation – safeguarding against investor abuse and more comprehensive disclosure obligations – should promote public confidence in both the primary and secondary securities market and should also result in development of a European database on publicly held corporations. This will facilitate wider knowledge of European communities among investors, analysts, and advisors around the world and could result for stronger demand for EC company securities.

It will also be hoped that greater liquidity in the securities market will promote the use of securities to fund acquisition of other businesses; and that this will result in economies of scale. Finally, increased prudential regulation should make it easier for EC corporate issues to satisfy the regulation of stricter national authorities like the U.S., and thus expand the opportunities for EC companies to raise capital outside of Europe, or reducing the cost of capital.

### **3.12. Harmonization as a Desired Contemporary Solution.**

Unless drastic solution is harmonizing: regulation by reducing the differences (or the effect of differences) in national regulatory regimes. Harmonization is the process of reducing regulatory disparities among mutually accessible markets, through the development of common or mutually compatible regulatory regimes, standards, and practices.<sup>3</sup> Advocates hope that regulation would lessen the threat of *regulatory arbitrage*, or allowing competition among national markets to force prudential regulation down to the lowest common denominator.

Critics fear that harmonization could raise the threat of *regulatory-imperialism*, in which less regulated markets are forced to become more regulated. Pessimists fear that the effort to achieve harmonization may itself become a form of regulatory arbitrage. The term "harmonization" itself has in

---

<sup>3</sup> Miller, "Regulating Financial Services in the United Kingdom -- An American Perspective," 44 *Business Law*, 323, 1989. And Bernard, "The United Kingdom Financial Services Act: A New Regulatory Framework," 21 *International Law*, 343, 1987.

this way become controversial, and because it is controversial, it has become difficult to define.

Different stockholders or interest groups tend to define the term in ways that imply different objectives as well as different approaches. It is necessary to recognize, at least, that harmonization allows for two approaches. The first, *commonality*, means the development of uniform international rules, such as uniform disclosure requirements enforced in all countries.

The second, sometimes called *reciprocity*, or comparability, call only for substantially equal minimum standards. The approach of the European community, in attempting to harmonize its securities market regulation, for example, among its members, has shifted pragmatically from commonality to comparability. Substantially equivalent rules could be sought on a regional base, either gradually through a multinational forum of program, or through a series of informal arrangements.

Informal arrangements in the past have not been very effective. The risk with a policy of reciprocity with substantial equivalence is that countries with the most stringent regulations will be led to interpret *substantial equivalence* too broadly. They will begin to interpret their own rules more loosely and enforce them more slackly, in order to attract or retain foreign investment in the face of competition from countries with less prudential regulation. Then domestic firms will demand regulatory parity in order to compete with foreign firms, and this becomes a form of prudential deregulation through leveling downward -- i.e., another form of regulatory arbitrage.

There is hope because the EC 1991 initiatives provide an example of how harmonization could be achieved in major market nations, given sufficient incentive and leadership has been provided to it today. If successful, the EC initiative will in fact form an example of how heterogeneous communities can converge.

### **3.13. Conclusion.**

This chapter has developed historically the creation of a new industry which merges all kinds of financial activities and transactions. Such an industry is evolving because of deregulatory directives in Europe and that it will cause EC to be the largest banking market by 1992. In many ways, it is similar to the FSI that has been evolving in the U.S. for some time now.

We have reviewed the two most important directives involved, the various methodologies suggested to achieve them, some of the new trends coming up (like new services being offered, issues in the securities markets, etc.), the evolution of the largest banking market in the world, the differences in approach of FSI should Europe take either the fortress or the free market approach, and the many disparities and conflicting agendas that are occurring. We have also looked at the wider scope of financial services, i.e., beyond banking into the securities market, and the issues it has evolved.

In light of the trends and options that are being exercised today in the community and those that are being tried by some of the leading players in the

FSI, we can say that industry wide trends are already underway in the region. These trends mostly include :

- Greater automation of the back office to facilitate on-line computing;
- Automation of newer products and portfolios;
- Composing of information across products and customers for quick service in the region;
- Physical-level, company-wide integration of hardware and software systems in order to achieve composite information;
- Greater use of telecommunications for automating flow of information.

But the fact is that all these trends are not necessarily moving in the same direction for each FSI member. There is no overall focus at the CEC level as well as the inter-organizational (industry) level about the manner in which to reach connectivity at all levels.

As the technology matures and the needs of the EC region become clearer to the FSI members, here will be a pressure on the CEC to insure that the development of and adoption of some form of an 'EC standard' I/T composition technology takes place for industry's internal as well as external utilization.

There will also be a need to understand three additional points :

- Where there are considerable differences from standards, these differences are well understood by all the implementers.



- There is a need for continued co-joint efforts among the CEC officials, government officials, and FSI executives to evolve common strategies and make implementation plans for them.
- That newer hardware and software tools for quicker adoption (for example, prototyping, information composing) may become absolutely necessary to close the gap between the technology available today and the technology that needs to be developed in time.

## CHAPTER 4

### POLICIES AND RESPONSES FOR 1992

#### 4.1. FSI Approaches for Unification <sup>1</sup>.

In our research during 1990, we studied the activities of seven banks, two of which had merged with two of the other five. In accordance with academic ethics, we have masked the identities of these banks and shall not provide their real names, or annual figures, or exact locations. But this masking (as Banks 1 to 5) does not affect the analysis that we have provided here.

The only essential thing to mention about them is the range of products and services offered by them. Three banks (Banks 1, 2, and 5) are universal and provide a full range of products and services to their clientele. The other two (Banks 3 and 4) are primarily investment banks (and thus, competitors of each other from EC standpoint).

We found that almost all these banks as well as the CEC officials envision two types responses to 1992 from the Financial Services Industry. To us, these clearly are *two inverse possibilities* rather than the only options available. In our description below, words or phrases given in inverted-commas are typically those used in the dialogs with CEC or FSI executives – they should bring out the

---

<sup>1</sup> The author uses some of his own terms that should not offend the reader. These terms are explained in the text of this thesis – particularly, this section – and include for example, *computeracy, fragmentation, segmentization, etc.* Please do not look for these terms in a dictionary and face frustration! They have been *constructed* to illustrate a new point.

*flavor* of the discussions that took place and the executives' assumptions and beliefs behind these visions. The CEC executive we interviewed commented, "..... they (the banks) really have only two options – reach-out *or* phase-out ....." Similar comments came from the banks we interviewed (as will become clear from a reading of the Appendices).

#### **4.1.1. Perceived Approaches.**

The two strategic approaches envisaged for 1992 include *Going Regional* and *Remaining National*.

##### **4.1.1.1. Going Fully Regional.**

One clear approach was to become truly regional and spread out to all twelve nations, i.e., intentionally have a physical presence everywhere – regardless of the nature of the markets existing from country to country. This response, would imply locating (through acquisitions or other strategic alliances) in all countries of the EC and maintaining each's local autonomous decision-styles, methods, and practices in tact. There would be only minimal influence from the center, i.e., the home-country.

The assumption here is that, being all-over and maintaining such an international image, (the bank would prove its overall presence and), would invariably fetch different types and greater volumes of business in the different EC communities.

This is an experimentalist view taken by many FSI executives, typically those who want to 'take-the-plunge' unconditionally. Two banks in our sample (Banks 1 and 5) followed this approach. One, in fact, proclaimed; "We are already fully Regional because we are physically present in (almost) all the 12 countries and have good working relationships at all these places with the locale there, with minimal central interference."

The *degree* to which this 'smooth coalition' can be achieved would, in reality, vary from bank to bank. It would define the level of Regionalization attained by a bank. We believe that more the implementation of subsidiarity principle, the greater the level of Regionalization that can possibly be attained. This is so because there would be an appropriate mix of central (home-country) control and the different local control that meet the existing practices of the markets in different areas of the EC.

As we believe (and in fact, witnessed in our sample) that there can be varying degrees of Regionalization, it would be appropriate to deduce that a regionalization approach would really present a situation of varying degrees of subsidiarity – and, in our case, it implies varying degrees of hybridization (see Chapters 2 and 6).

#### **4.1.1.2. Remaining Mostly National.**

The other approach is to remain *exactly* the same as now, i.e., mostly national and to continue getting (or lobbying for) national government's backing and creating marketing campaigns that would bring the support ('loyalty') of traditional customers.

The underlying assumption is that EC unification is either still a dream or will take very long. Therefore, continue to rely on and propagate with the past practices. This would keep local clients closely-knit with the bank and the respective (home-country) government supportive of (as well as dependent upon) the bank.

This is a **reserved** (or conservative) view taken by some of the FSI executives – typically those who want to ‘wait-and-see.’ This posture was taken by one of the banks in our sample. It felt that competing without a strong asset base in *all* (or most) of the countries would prove to be fatal. Additionally, it believed that a ‘nuclear-mass’ of customers is needed in a territory before setting up operations in that territory. Such a critical-mass only comes with time and the bank had this advantage only in its home country whereas their competitors had it in the other communities.

This approach can have two major implications in the long-run. Either a bank with the national approach gets time, consolidates within its home-country, and begins growing (e.g., moving outwards) and changes its approach over time while evaluating markets elsewhere. Or, avoiding competition, it gets stifled by a larger bank (e.g., a Regional one) and is forced out of business or gets taken-over by a stronger competitor operating in nearby territory.

#### **4.1.2. Other Approaches.**

Our critical view is that both, Going Regional (we label it Regionalization Strategy) and Remaining National (we treat it as a special case of Fragmentization Strategy), are really :

- Two opposite strategy-types, i.e. experimentalist versus reserved, and
- Not fully representative of other types of strategies *in-between* and, in fact, under-way (These can be (and have been) undertaken since EC directives were formulated).

In essence, **we feel that there is a spectrum of strategies** that can be adopted in response to CEC's directives and other incentives in the Pan-European space. Such a spectrum provides us with insights into :

- The variation in geographic and product choices available today, and
- The possibility of overlaps among strategies during the transition, (i.e., when things may not be 'fully clear' to some members of FSI).

The reader can review, in Section 4.3 below, the matrices of policy positioning of each of the five banks that we conducted interviews in (based on its products, geographies, and personnel- and customer-sophistication). These also suggest the *continuity over an entire spectrum*.

An important point that the author would like to profess in this thesis is that an FSI member need not always stick to one strategy at all times but that the strategies can (and do) change over time. This can prove to be beneficial,

**provided the short-term approach is an ordered *subset* of the long-term vision**

and there is logical development from one to another. This will ensure that technology policies do not radically shift with every change in strategy. Thus, the investments in I/T have a meaningful long-term direction well-established into the future.

This requires vision and creative thinking. It can be facilitated through a three-tiered development of the FSI in cooperation with CEC and other important actors in the field. The reader can review development at the strategic level in Chapter 2, development at the industry level in Chapter 3, and development at the bank level in Chapter 5. The issues related to technology platform integration at various hybridization levels can be reviewed in Chapter 6. More on this point later (Section 4.2).

#### **4.1.3. Spectrum of Approaches.**

The five policy positions that form an extensive basis for identifying choices made by FSI members in the European Communities include :

- Fragmentization
- Stratification
- Cross-Integration
- Regionalization
- Globalization

We briefly explain here five terms (including the Regionalization and Fragmentization alluded to above) and their respective place in our spectrum for strategic approaches of the Financial Services Industry in the European

Communities. Figure 4.1 on the following page illustrates these on a hypothetical area. Figure 4.2 shows a Venn-diagram analysis of these approaches.

**Fragmentization** (elements of Fragmentization will be called ‘factions’) implies that a bank sees the markets as classes of different types of customers and goes for one or a few of those factions. Fragmentization is subtly different from the traditional definition of market-segments<sup>2</sup> in that the market-segments of one EC Community may not be identical to segments of another Community. So, there are not exactly the same customer bases *across* a heterogeneous space. Thus, the need for this concept of fragmentization.

Fragmentization implies less investment in different geographical locations, fewer personnel and overhead costs, simpler technological platforms, and a relatively smaller customer base. Banks 3 and 4 are following somewhat of this approach.

An important manifestation of fragmentization is ‘remaining national’ (Section 4.1.1.2) as it focuses on *the national* faction in the EC region. Here again, it is important to note that things become much simpler with a national approach, particularly for the smaller-sized countries, where practices and timings, etc. do not vary much.

**Stratification** (elements of Stratification will be called ‘straits’) is a logical extension of the idea of fragmentization. It breaks the markets not into several

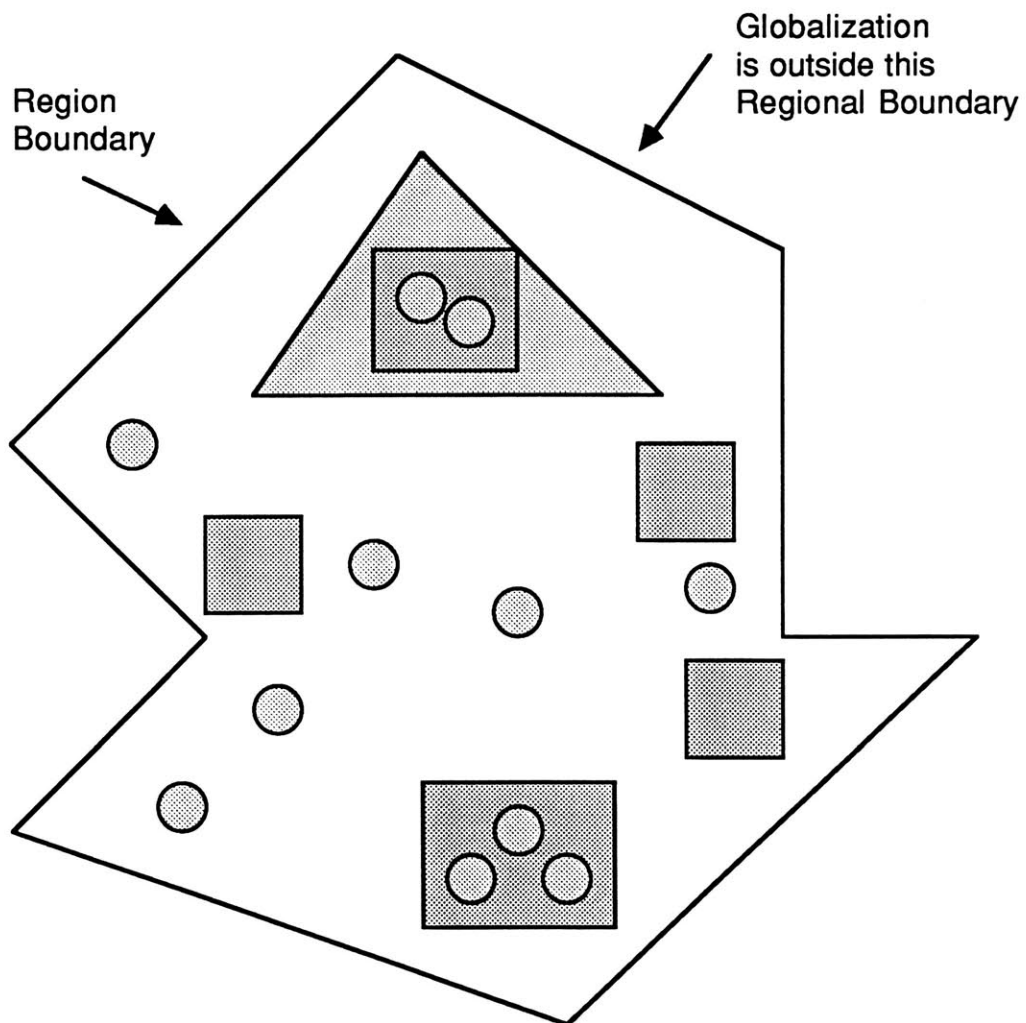
---

<sup>2</sup> A market segment is a class of customers having a similar trait (and, therefore similar choice) in all parts of the world.

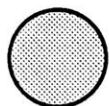


**Figure 4.1: The Five Approaches to EC Unification -**

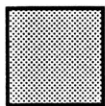
Representation on a hypothetical geographic area (Can be translated to EC)



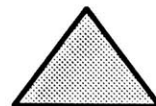
Factions



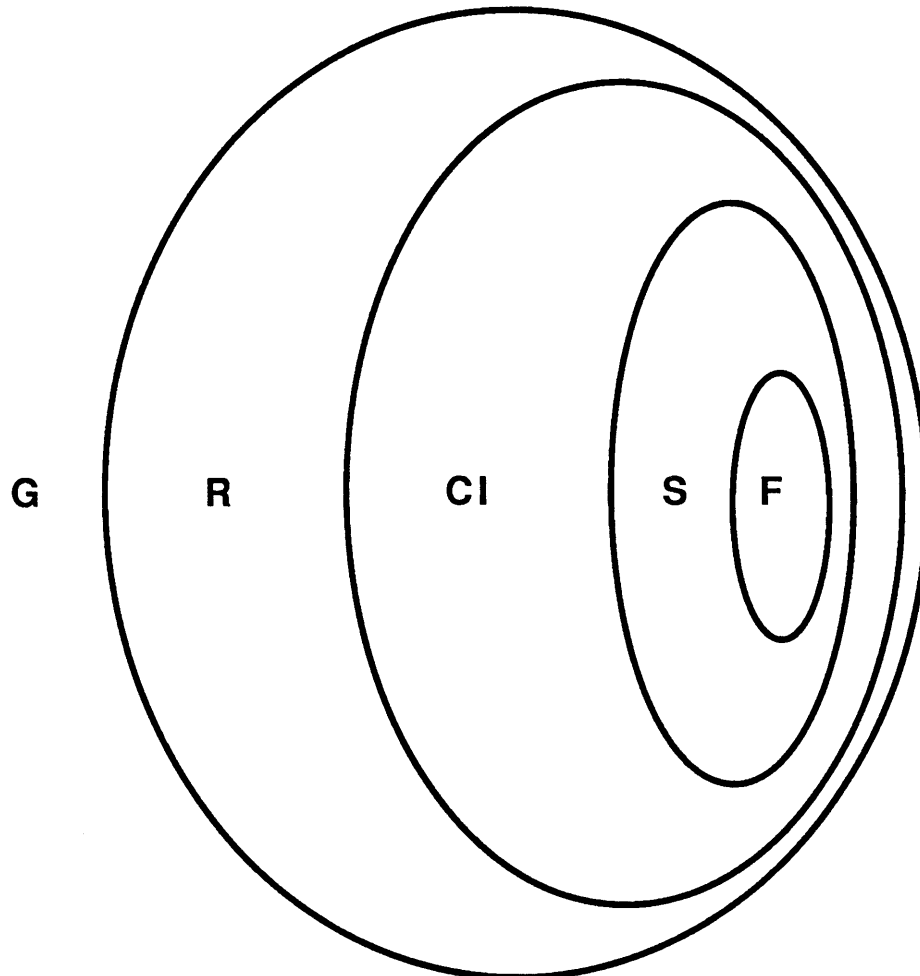
Straits



Cross-Integration



**Figure 4.2: Venn Diagram of the Five Approaches**  
Logical relationships expressed in set-format



**Note:**

Stratification can be over un-related fragmented areas. Cross-integration is across F and S. Regionalization is the total encapsulation of F, S, and CI. Globalization necessarily is a step beyond Regionalization

**F = Fragmentization**  
**S = Stratification**  
**C = Cross Integration**  
**R = Regionalization**  
**G = Globalization**

factions, but a *few* major, traditional sub-Regional geographies. Essentially, it is a kind of sub-regionalizing but because the EC approaches are at times strangely configured (e.g., one may pick up only portions of a country for formulating a market scope – and leaving out the others – in a strategic analysis), we have evolved this term.

So, a strait can have a group of countries (wholly or partially) in it. Each strait can have several factions within it. At times where geographical boundaries cross but customer segment is not different, a strait may contain only a part of the faction.

Stratification is a high-level aggregation of potential markets. It can be viewed as a super-set of fragmentation. Here, an FSI member could develop a two-tiered approach; one for a specific sub-region (for example, home country) and another for the rest of the region (for example, remaining EC or rest of the world). Bank 2 was following this approach. To some extent, Bank 3 also had a flavor of this in its vision for the future.

The implication of stratification is that there is a greater number of customers but also more complexity in terms of the asset types, customer varieties, local conditions, etc. and – consequently, more complex Information Technology platforms.

**Cross-Integration** involves the unison of straits and factions, and possibilities of varying degrees of the two. This is also a sub-regional role within EC, but this time, it *crosses* segments and fragments in a particular sub-region. Typically, the case of Bank 4 illustrates this ambitions *yet selective* approach.

This means integrating different fragments in a clearly defined territory, *not* throughout the region as the latter would be Regionalization.

Cross-Integration is even more complex (perhaps, the most complex that one can go) in a sub-region. It necessitates a multi-product/service approach to the markets, greater asset-base than the factions or straits, more heterogeneous technology bases and many flexible variables that one would need controlling if this approach is to be made effective.

**Regionalization** denotes coverage of the entire region, encompassing all twelve communities. It would cover the overall geography of EC and offer most of the products and services that a financial service can provide in modern times. As such, it addresses a bigger agenda – in terms of geographies and products –than the three sub-regional strategies (i.e., Fragmentization, Stratification, and Cross-Integration). Bank 5 is following this policy.

Regionalization is more like a high-order super-set of these three strategies. *This* would be an ultimate strategic approach that CEC would want a large player to take in the Pan-European space in facilitating the unification of the Economic Communities. As the reader will note later, that Regionalization is itself a sub-set of Globalization (see below).

Regionalization implies that the bank needs to have (or develop) a large asset base, a large customer base, a large product offering, large and multi-national management, and make heavy investments in I/T for linking across the Communities on real-time basis for getting strategic and operational information.

**Globalization** – as the term implies – looks beyond the Regional level and attempts to encompass a considerable portion of the globe. There are many approaches to globalization but we will not go into its details here. Interested readers can review literature on this emerging concept <sup>3</sup> elsewhere. Suffice it here to say that globalization takes a world-market view with a stress on combining managerial strengths across the globe and taking a leadership position in world markets. Globalization is the super-set of all our strategies in the context of EC. Typically, Bank 1 in our case is trying to follow this strategy. Bank 2 is keeping this vision ‘in reserve’ for future adoption – after successful Regionalization.

The above five strategy types result not from a traditional breakup of markets into segments (the way a conventional marketing expert would do in a marketing exercise in the U.S. for example), but of viewing the posture taken by a player in the advent of major changes in regulations and the financial environment. This means that in the window of opportunity available for a limited time period, an organization can capture additional economic rents by assuming different roles in one of the five patterns above (then traditional market segment approaches). *The author would submit that some of the terms used here are his own in trying to define concepts that are not specified in the way they need to.*

---

<sup>3</sup> For example, there are excellent articles in Harvard Business Review of March-April 1991. The two-set articles titled *Managing Across Borders: New Strategic Requirements*, by Christopher Bartlett and Sumantra Ghoshal in Sloan Management Review of Summer and Fall 1987. For more, the author suggests an excellent book edited by Michael Porter on *Competition in Global Industries*, HBS Press, 1986.

Table 4.2 (section 4.3) shows the relative positioning of our five strategy-types over the entire spectrum. It also mentions the value I/T is adding (or can add) in each strategy as well as the requirement of different I/T types under each of these five strategies.

#### **4.2. Analysis of the Five Banks' Strategic Approaches.**

We now very briefly, explain each of the five bank's placement on our strategic-approaches spectrum.

Bank 1 is essentially set out for globalizing, with this long-term strategy in mind. However, its I/T requirements still need a lot of attention and adjustment to support such a high-order agenda (see Chapter 5).

Bank 2 has a stratification policy. It is focusing on two types of products, one product-range for the home country and a separate one for varied and selective parts of EC. This, in fact is a typical example of careful stratification (while thinking that it is remaining national in the short-run). Depending upon the stance taken by its executives, this could fall under either integration or regionalization in the long run, i.e., in the next century.

Our concern is that Bank 2 is not sure yet which direction to take for such a long focus. Accordingly, the shift in its information technology policy (and corresponding investments in hardware, software, and training) need to be carefully worked out. Our recommendation, of course, would be for a

regionalizing policy because of its large asset-base and clientele and because of its vision to 'become global' in the next decade.

Bank 3 has a clear fragmentation policy. In the long run, it wishes to integrate, which may fall in line, but if it were to become Regional within the next ten years, it would find difficulties in trying to catch up with major investments into information technology. With the limited access of SWIFT, consolidation of its investment banking activities throughout the globe could be achieved but only with investment products – not all product ranges.

Bank 4 is also following a fragmentation policy, with the possibility of stratification in the future. This will be a minor shift for Bank 4, and not a considerable change in its strategy as such. However, its tremendous focus on niche products is laudable, as long as it will be able to uplift its personnel in information technology and its level of computeracy, its fragmentation portion of strategy in the short- to medium-term can be highly successful. But its composition of information would still lag behind compared to the other banks in our sample. Given that it is more a 'clean-slate' case compared to the other four banks, it has a greater chance of being set on Composite Information Systems.

Bank 5 has a regionalizing policy with a long-term globalizing policy. Both the short- and long-term follow each other logically. However, the investments in information technology at present, as inherited from the past and as envisioned in the future, are **not** necessarily in order. Additionally, the back office (i.e., data-center) problems are costing more than thought of or than the the benefits through regionalizing per sé.

Overall, we believe that the five types of strategies we have presented here could be worked out in more detail by each of the banks and could be used as possible guidelines by them for positioning their present and future strategic policies. Without such a clear vision (as well as for corresponding information technology systems required, both in the short- and the long-term), much of the MIS potential and resources would actually be wasted.

The issues of composing information from heterogeneous and disparate sources become greater as we move in this order: **from fragmentation to stratification to cross-integration to regionalization and finally, towards globalization.**

Table 4.1 can be helpful as a rough guide in checking out availability of the most important factors in a bank before it decides on a strategy. This table is a rough, high-level summary, not an exhaustive checklist.<sup>4</sup> It does not necessarily mean that fragmentation is the easiest from an information composing point-of-view. Certainly, it requires less investment and generates quicker returns than the other strategies, but the problem of heterogeneous systems within the fragmented area will also exist. Forced standardization would not help solve this problem in the short- or medium-run.

---

<sup>4</sup> Detailed policy and technology table can be obtained from Composite Information Systems Laboratory at M.I.T. by request in the Fall of 1991.



**Table 4.1: Important Factors in Considering EC Strategic Approaches**

<b><u>Strategic Approach</u></b>	<b><u>Desired Factors</u></b>	<b><u>Impediments</u></b>
<b>FRAGMENTIZATION</b>	Low asset requirement Focused, local markets Simple I/T platforms	Slow regional expansion Lower on profits
<b>STRATIFICATION</b>	At least, 2-product mkt. More assets than above Some degree of I/T composition	Duality of product accounting, etc. Systems pose a problem in reconciliation
<b>CROSS-INTEGRATION</b>	Captures more markets Requires broader asset-base, broader customers	Complex systems Need real I/T interface for organizational conn.
<b>REGIONALIZATION</b>	Provides high visibility Provides greatest returns Enables EC-wide scope	Most complex approach <i>Composite</i> I/T interface for strategic connectivity necessary
<b>GLOBALIZATION</b>	Intra-regional offerings Highest visibility Highest Gains Full Competitiveness	Sophisticated I/T Real-time information State-of-art technology and training

### 4.3. Theoretical Framework of Approaches:

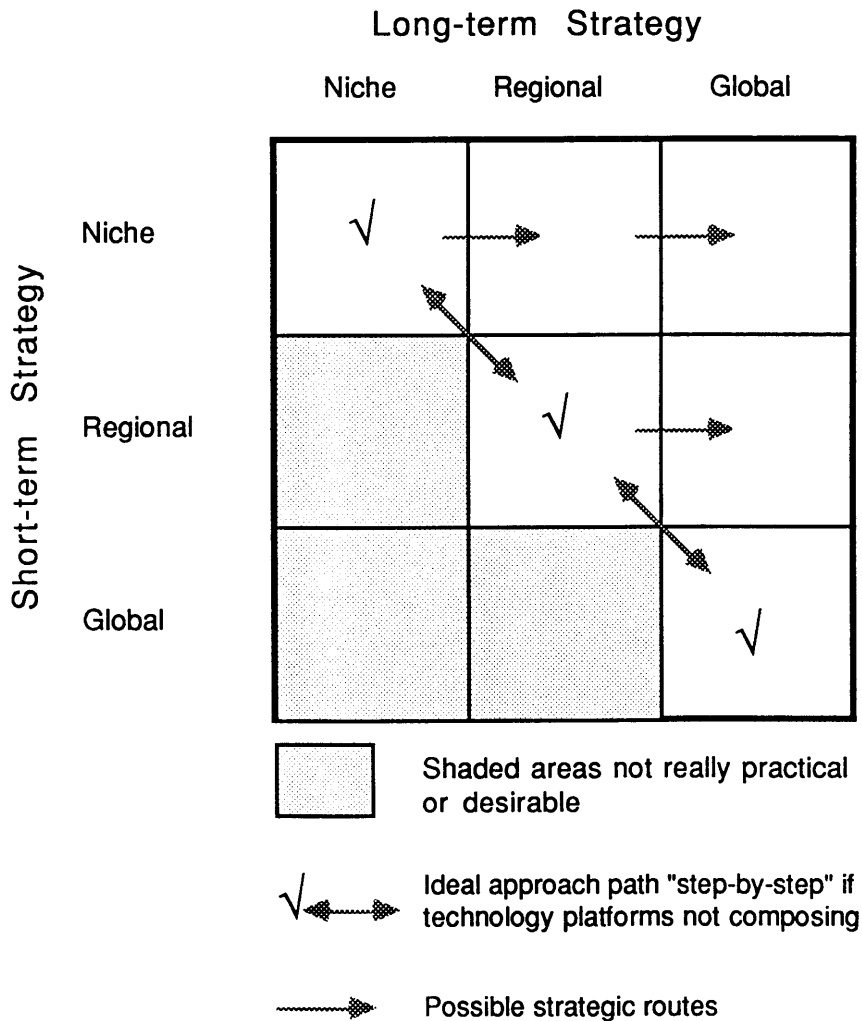
Theoretically, if we group together the three sub-regional strategies (i.e., fragmentation, stratification, and cross-integration) into one class, that is, the 'Niché' class, it is possible, to have nine types of policies when comparing the short- and long-run *simultaneously*. These are based on the the theoretical extents of geographies described in Section 4.1. Figure 4.4 on the following page shows these on a matrix of *short-term versus long-term* strategies.

The vertical axis shows short-term approaches while the horizontal axis shows the long-term strategies. Anywhere in this matrix, a bank can choose its position today. However, some of these combinations do not make sense. For example, it is difficult to become global in the short-run. Also, if one could ever become global in a short span, it would not necessarily like to relinquish such a position in the long-run and would rather try to develop/deploy technology for remaining in a global leadership position.

Therefore, even though it is theoretically conceivable to lay-out the above nine types of policies by the FSI members, it may not be practically realistic to follow each and every one of them. Subsequently, the five possibilities that do fall in place and that we have discussed in Section 4.1 are now shown in Table 4.2.

An important observation that we can make on the long-versus-short-term strategic/policy-route (see Figure 4.4) is that *moving along the diagonal or across to the right is more cost-effective as well as efficient*. This is so because jumps or moving downward amounts to losing time.

**Figure 4.4: Theoretical Strategic Distributions.**



Owing to the fact that technology development and deployment takes time, the training of personnel who install and use it takes time, and – though a quick exposure to a wider region can be tempting for a faster growth, taking uncalculated plunges can cause the technology platforms to cause the bank to fail in accomplishing an envisaged strategy. Many-a-practice may not be so readily adaptable to new (and radically different) situations.

**Table 4.2: STRATEGIC SPECTRUM FOR EC REGIONALIZATION**

FRAGMENTIZATION	STRATIFICATION	CROSS-INTEGRATE	REGIONALIZATION	GLOBALIZATION
<p><u>Definitions:</u> Key players see <i>no value</i> in creating international or global markets</p> <p>Market seen as a collection of <i>several</i> small fragments and addresses one or two.</p>	<p><u>Definitions:</u> Few-tiers approach: • Universal domestic • Specialized for rest of market</p>	<p><u>Definitions:</u> Multi-national trading and cross-border <i>mutualizing</i>.</p> <p>Little voluntary globalizing</p> <p>Models for agreements to move beyond traditional</p>	<p><u>Definitions:</u> Establishing only regional-level regulations based on community benefits</p> <p>Protectionist Trading in Blocks, if/when needed</p>	<p><u>Definitions:</u> • Bilateral, cooperative agreements). • Technology for 24-hour banking, trading, etc.</p>
<p><u>IT Consequence:</u> IT Adds to the cost burden and doubtful reliability and high risks involved</p>	<p><u>IT Consequence:</u> IT employs two distinct types of systems; each is a separate disjoint island.</p>	<p><u>IT Consequence:</u> IT based on models of existing MNC operations and semi-connectivities.</p>	<p><u>IT Consequence:</u> Possible controls through <i>common</i> systems features and stnd. HW, SW, PW</p>	<p><u>IT Consequence:</u> IT employs commercial NW's in <i>global</i> markets. Higher connectivity-levels.</p>
<p><u>Examples:</u> Existing IT practice of heterogeneity, disparity, lack of connectivities.</p>	<p><u>Examples:</u> Financial institutions with multi-product offerings.</p>	<p><u>Examples:</u> Experienced MultiNational Corporations (eg. Citicorp)</p>	<p><u>Examples:</u> Examples: EC 1992, OECD, Pacific Rim</p>	<p><u>Examples:</u> IT requires new order of professionalism cognizant with the emerging FSI</p>

When a bank needs to assess its strategic approach, it has to first place its current position on the grid. Drawing a line in the direction of where to go in the long-run will facilitate the strategic mapping process. If the line points rightward or diagonally to the right, it is a good move. Else, the bank may seriously need to re-think its moves in the EC.

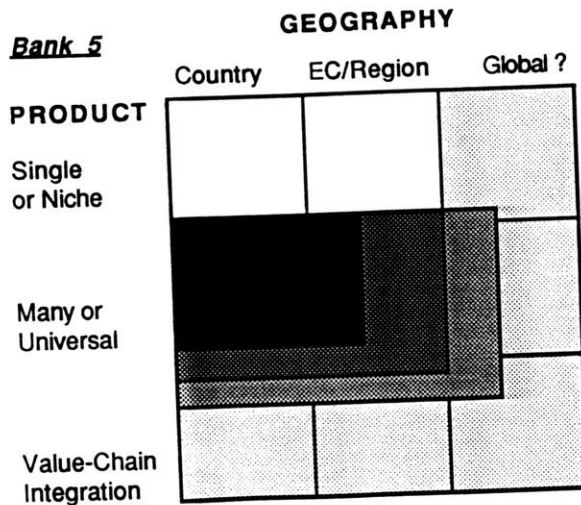
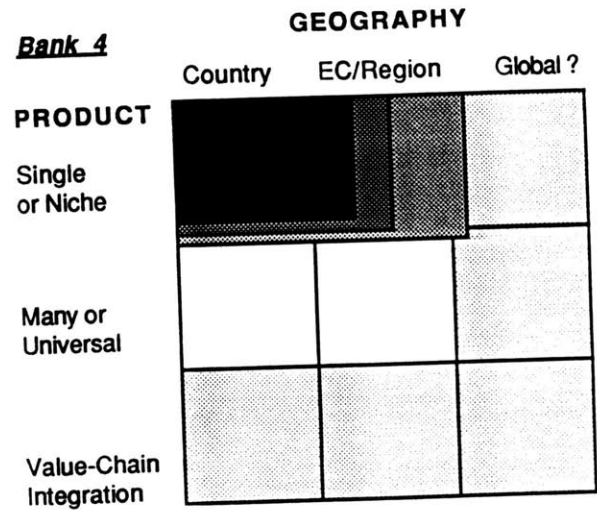
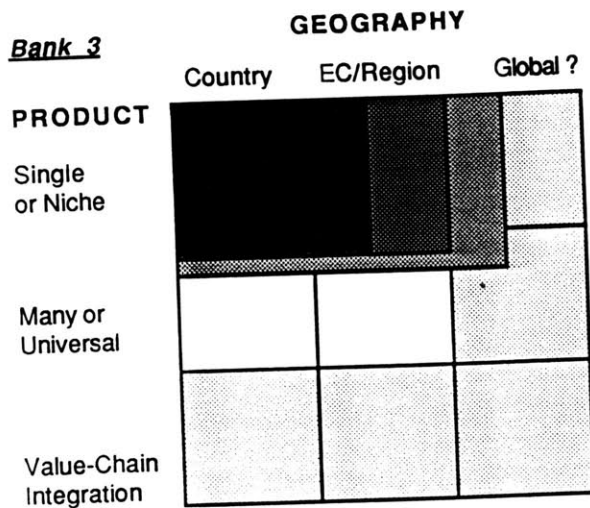
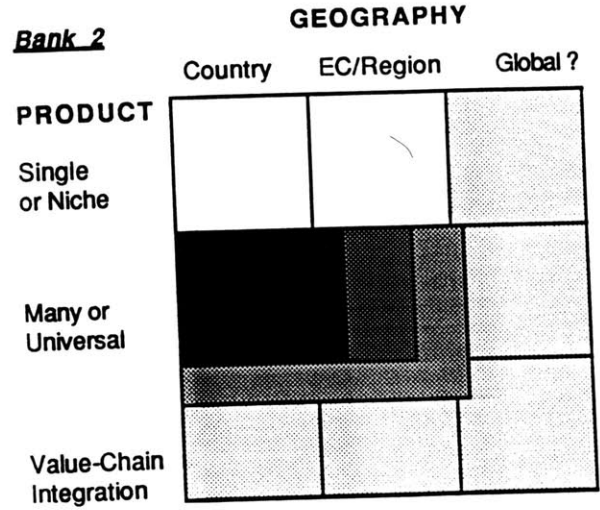
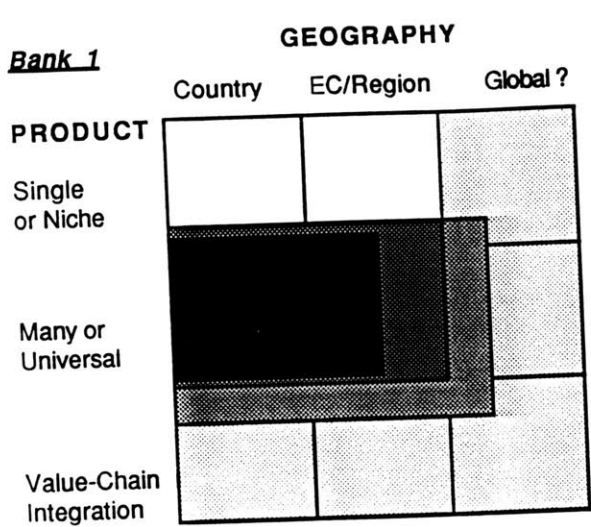
#### **4.4. Positioning based on Internal Strengths and Envisioned External Challenges.**

Now, we would like to show two matrices that summarize our findings in the five banks studied in our research. A more detailed account is available in the Appendices and our critical analysis is available in Chapter 5.

The first is a **product versus geography matrix**. For each bank, the blackened region is where the bank (roughly) exists today. The dark-shaded region is its current strategy is for 1992 (*or* in the short- to medium-run). The light- shaded region shows its long-term (around 10 years) strategy. Lightest-shades are the ultimate extents (i.e., limits) of “Universal Product-Global Geography” strategy.

This Product and Geography matrix clearly shows a general outward thrust of the banks. Each bank has more thrust towards larger geography and greater products or packaging. An important observation is that, depending upon the nature of the product, the competition among the banks will be on the kind of service they provide for the same product, i.e., universal banks will fight on the value addition they can provide vis-a-vis their competitors. Similarly, the investment banks will have to provide extra value in their niche markets.

## Product and Geography Matrix



**Perspectives:**

- Euro-Marketing vs. Globalizing
- Standardization vs. Hybridization
- Leading vs. Watching

**Legend:**

- Current Strategy
- Envisaged Future
- Globalization Extents

The different sizes of shaded regions also show the goals currently imaged and the aggressiveness of the banks in the time spans discussed above.

Almost all banks that we interviewed said that they are aware of the large banks of other "trade bloc" regions. For example, they are aware of large Japanese banks in the Pacific Rim who are now making inroads into Europe and the U.S. They are also aware of large American banks who are now existing in a big way in (or are now trying to come into) EC. Therefore, the EC banks we studied have deliberately tried to place themselves as playing a greater regional role within EC and 'some' global <sup>5</sup> role for the EC banking Community in the world at large.

This approach is very different from a typical universal American bank today that wants to '*go global*' by operating at the world-level and upgrading its sub-regional roles into regional roles.

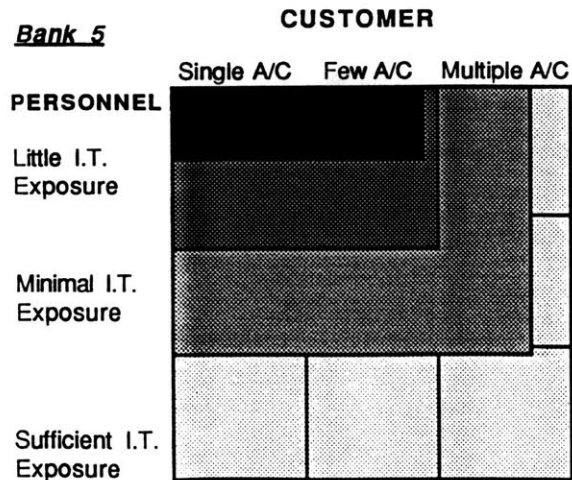
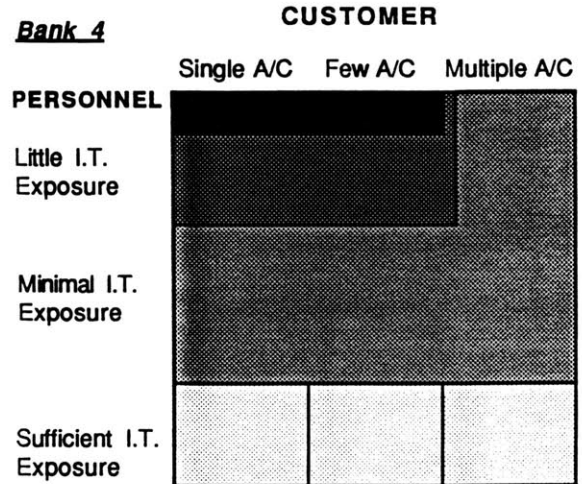
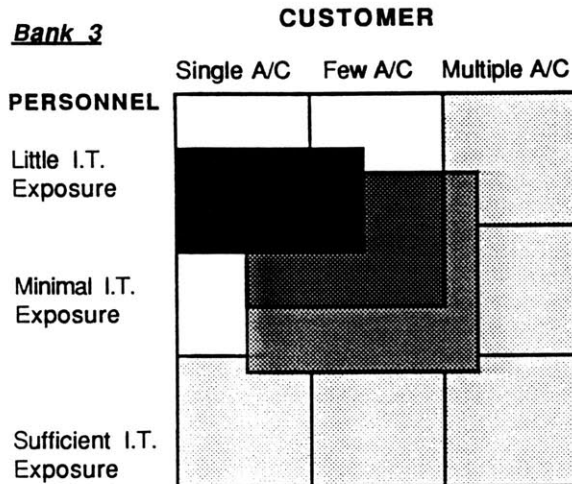
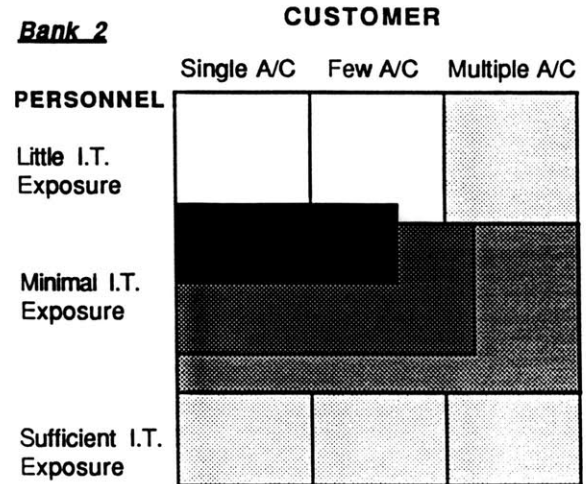
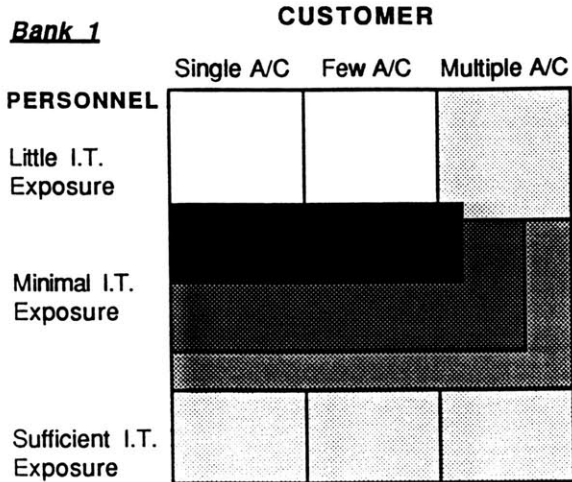
But then, the European banks we studied have lesser problems of composing information from all over the world because they do not exist currently in such large scale as U.S. banks <sup>6</sup>. However, the requirement for composing information from heterogeneous, disparate, multiple data sources, will crop-up more strongly, given the size of the EC banking market (Chapter 3 illustrates that this market will be the largest in the world).

---

<sup>5</sup> Invariably, we found executives in all banks saying that they would like to have some degree of globalization as well - no matter how soon. Ones with clear idea of *how* were those that also had their short- /medium-term IT policy more streamlined with long-term policy.

<sup>6</sup> Citicorp is a good example.

## Personnel and Customers Matrix



**Perspectives:**

- Outsourcing vs. Training
- Understanding Cultural Interfaces
- Customer Choice Availability

**Legend:**

- Existing Sophistication
- Envisaged Future
- Ideal Limits



The Personnel versus Customer matrix is our way of presenting the "computeracy <sup>7</sup>" (computer education and sophistication) of the personnel in each bank at various levels, the kinds of customers they typically encounter and intend doing so in the next few years. Again, the black region shows where the bank currently exists. The dark-grey shows what it today thinks it will be by the end of 1992, and the light-grey region shows where the bank plans for the long-term. The lightest shade provides extents of sophistication and computeracy that can possibly be envisioned for a *fully-efficient* bank and best-served customers.

As the diagram shows, there are indeed very different mixes of personnel and customers. This signifies the preparedness of the banks for the kinds of customers they have in mind. The easiest part seems to be that of Bank 3, which has medium level of exposure and does not want to necessarily become a very sophisticated technology user. The greatest challenge will perhaps be to Banks 4 and 5.

Bank 4 is planning to have lots of training and development of its personnel within the next one- to two-year term so as to handle more sophisticated customers in niche market of its interest. Bank 5 will – through its back office synergy – need to extend the exposure of Information Technology to a merged culture. Also, there will be somewhat sophisticated customers in Northern Europe (a Cross-Integration).

The Personnel versus Customers matrix is our way of trying to analyze how much each of these banks needs to upgrade its internal MIS and support

---

<sup>7</sup> Author's term for *computer-literacy*.

services and what kind of customers it can encounter at various stages. Obviously, it can be used to set up agendas for Human Resource Development (i.e., People-related issues) as well as for providing marketing interfaces in the various sub-regions and locations.

#### **4.5. Approaches in the Long-Run.**

We believe that – in the long run – when additional directives are announced or problems are solved critically among the players, newer product and I/T possibilities will evolve. However, as long as the status-quo remains the same as 1990 – depending upon the point of analysis taken by an FSI member – these five possible policies will remain.

In general, it is rational to expect the desire to take on a globalization trend but roots have to be set *correctly* in that direction *now*. If such an important role as global-player is indeed envisaged, we strongly recommend deep thinking on that *route*. In particular, the priorities and progression of activities and the fusion of more I/T need to be worked out in detail. There will always be a growing need to have assimilated (i.e., composed) information to monitor the strategy as well as to set newer strategies across the EC region as a subset of Global market.

Globalization will be more difficult to compete with because the EC regional support may not exist in 'tough' markets elsewhere. Typically, the Japanese and the U.S. markets can react sharply to the EC banks and so, I/T of the order of (if not superior to) these other regions will be required. The CISL paradigm presented in Chapter 6 will highlight some composition possibilities.

#### 4.6. Shifts in Policy and Implied Costs.

Based on our strategic options recommended in Section 4.2, we produce a three-dimensional actual policy space for each of our five banks on the three axes as follows :

- Axis 1:       Technology options
- Axis 2:       Strategy options
- Axis 3:       Time range

Axis 1 presents three possibilities in using technologies to integrate through whichever strategic option. The reactive technologies such as CIS are those that provide solutions to the problems that have been created due to history. These problems cannot be eliminated. Things cannot be undone. Reversals not being possible, these technologies help bridge disparate systems. In other words, they make loosely coupled systems appear as if they were tightly coupled to various mechanisms. The MIT CIS/Tool Kit is an excellent example (Chapter 6). The Entity-Relationship (ER) modeling tools are excellent example of a proactive user-oriented database design and implementation method. <sup>8</sup>

Axis 2 reproduces the five strategy options that we have indicated in the previous section. The order of presentation, though does not matter, is used from the smallest need for information technology to the largest.

---

<sup>8</sup> The author has conceived the Strategy axis. One of author's good colleagues conceived the Technology axis as a part of his Technology & Policy (Master's) Program thesis at MIT. Its details can be obtained in "*Technologies and Policies for the Development of Composite Information Systems in Decentralized Organizations*" by Bertrand Rigaldies, MIT CISL, May 1990.

The time axis is divided into three parts; the short-term (using the immediate window of opportunity up to the end of 1992), the medium-term (up to five years beyond 1992), and the long-term (around ten years or so).

The five diagrams on the following pages present the strategy options being considered over these ranges and the **shifts** in these options, if any, from the short to long run. The first shift (from current position to 1992) is shown by arrow 1. The second shift (shown by arrow 2) is pointing in the direction where the bank originally intended (and in most cases, still intends) going in the long-run.

The *overall* shifts are shown separately on the top right section of the pages for each bank. There are three things to note here.

First, because the diagram is supposed to be three-dimensional, the arrows inside the grids may not be very clear in terms of directional changes. But shifts are there in all cases and their directions have been facilitated by the use of numbered arrows..

Second, Banks 1, 2, and 5 (incidentally, universal Regional banks) are making sharp turns – even in orthogonal directions – whereas Banks 3 and 4 have deviated only slightly. This implies a saving of costs through a consistent strategy over a period of time. The ‘resultant’ (third side of the completed triangle) shows relative degree of achievement by the banks. Again, it can be noted that Banks 3 and 4 have gained most (or lost the least), given their existing resources.

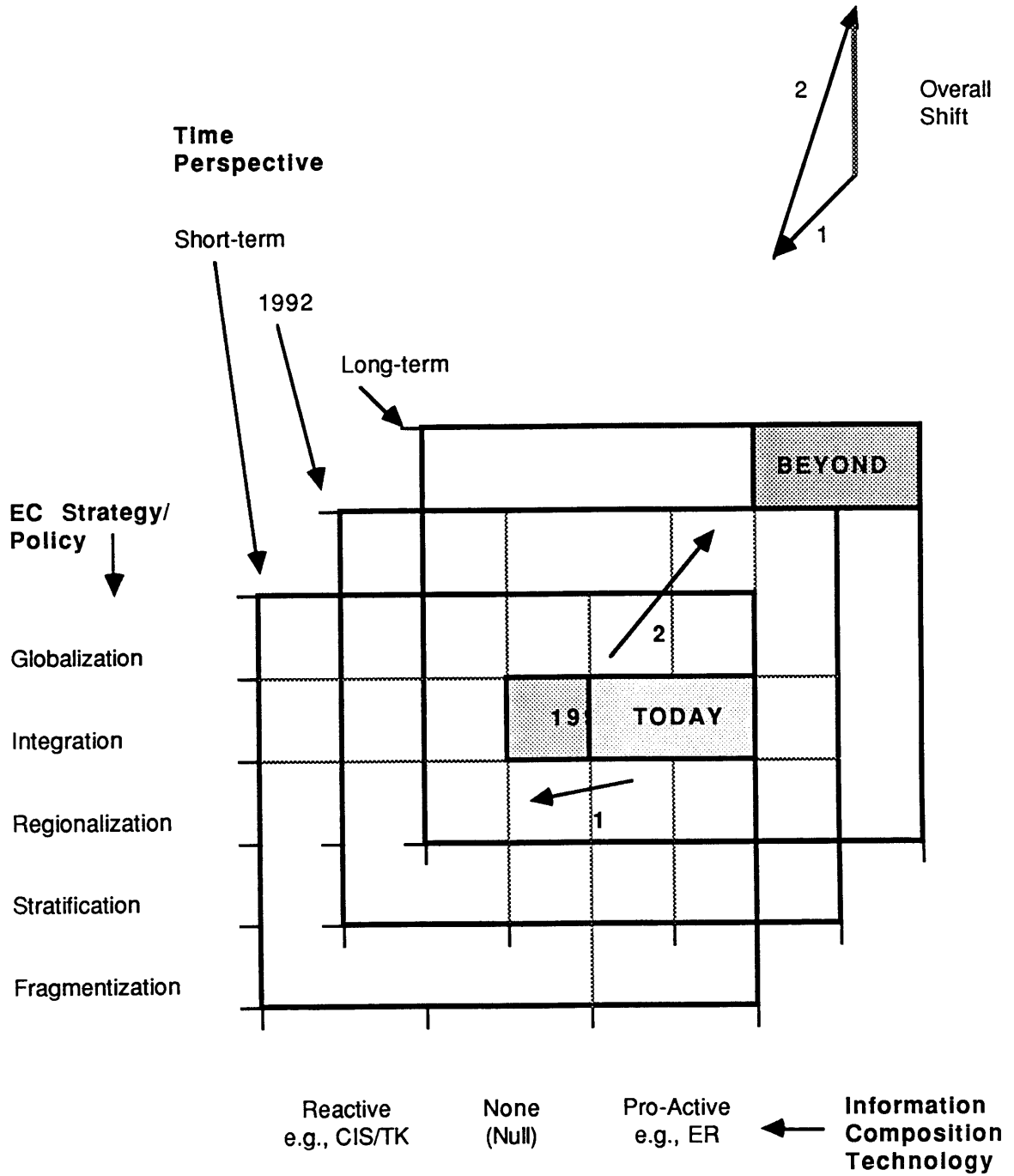
Third, with the exception of Bank 4 (consistently a niche bank), all other banks want to become global in the long run. If the ultimate goal is Globalization, why take so many routes ? One answer could be that this is the natural free-market competitive world understanding market signals differently and so, addressing strategies differently. Another answer could be that there are missing roles here that CEC, FSI, and other interested parties need to play to evolve a good policy (as mentioned in detail in Chapter 2 and 3).

An important revelation in this thesis is that we have analyzed certain discrepancies in the policy options of various banks in trying to use technologies to help them go for the strategies they desire in response to the 1992 directives. We have, for example, seen that standardization as a pro-active possibility, when does not come to fruition, the natural fall-back position is that of null.

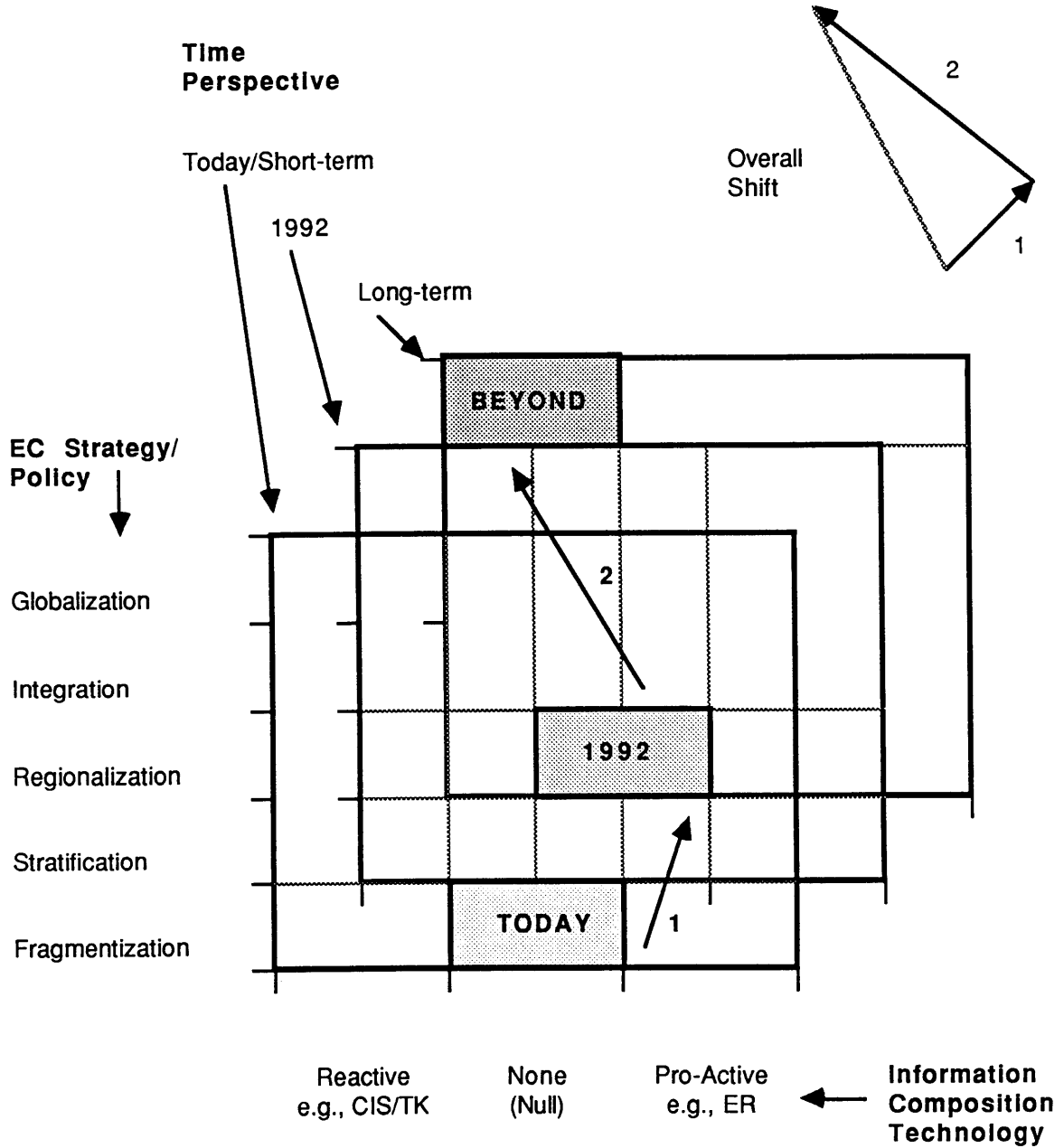
So, within the same time range, a technology shift may take place through MIS management's feeling of incapacitation and being overwhelmed with the order of magnitude of the problem. But what is more important is that we have seen executives and MIS personnel relate to us their goals for each of the three time spans as far as strategies are concerned. Even when strategies fell in line as natural super-set while organizations develop over the next several years, the technology required was not necessarily envisaged in cognizance with these strategies.

This has a significant implications: **heavy investment of costs and recurring costs through shifts in technologies.**

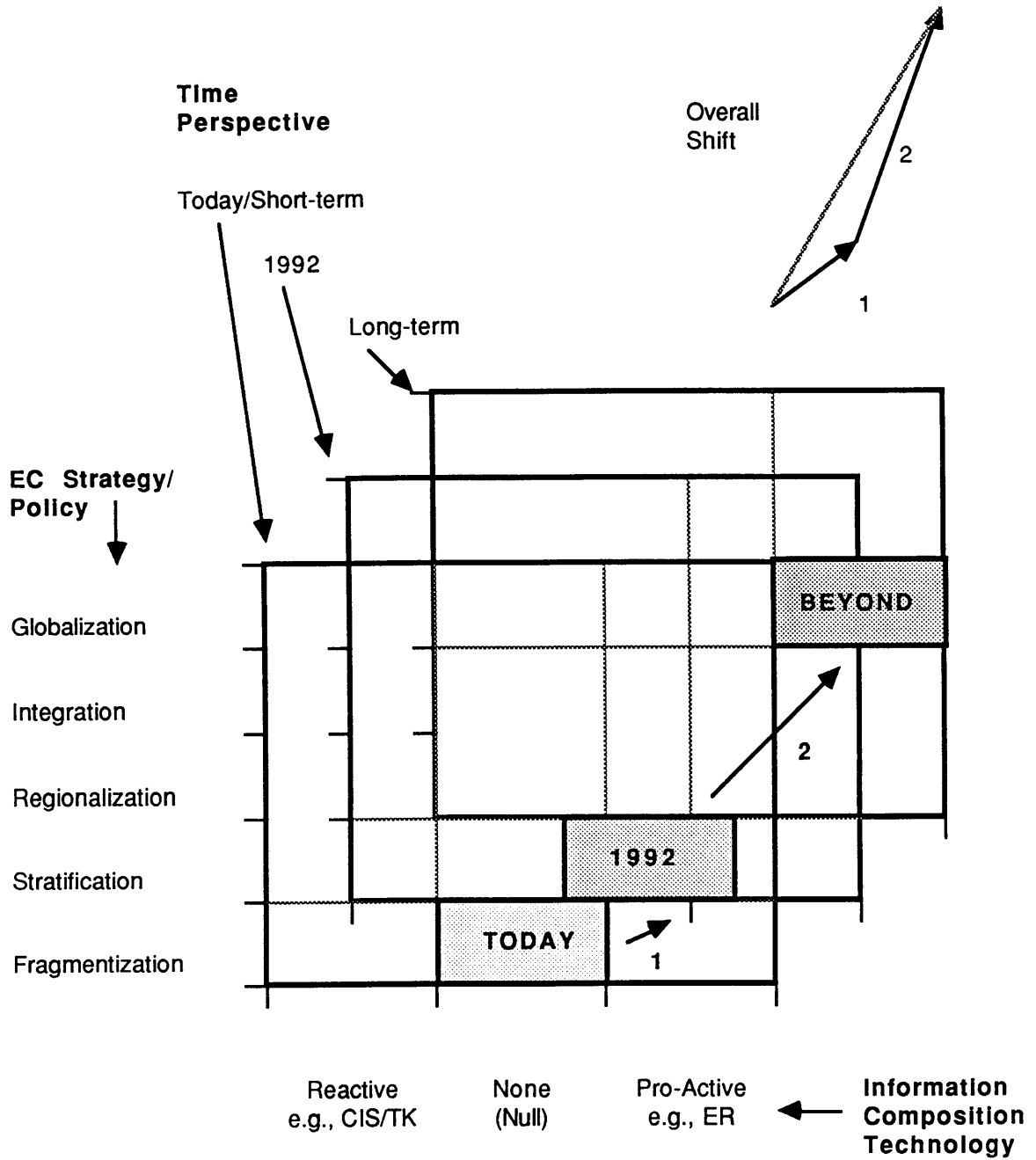
**Bank 1: Shifts in Technology Policies**



**Bank 2: Shifts in Technology Policies**

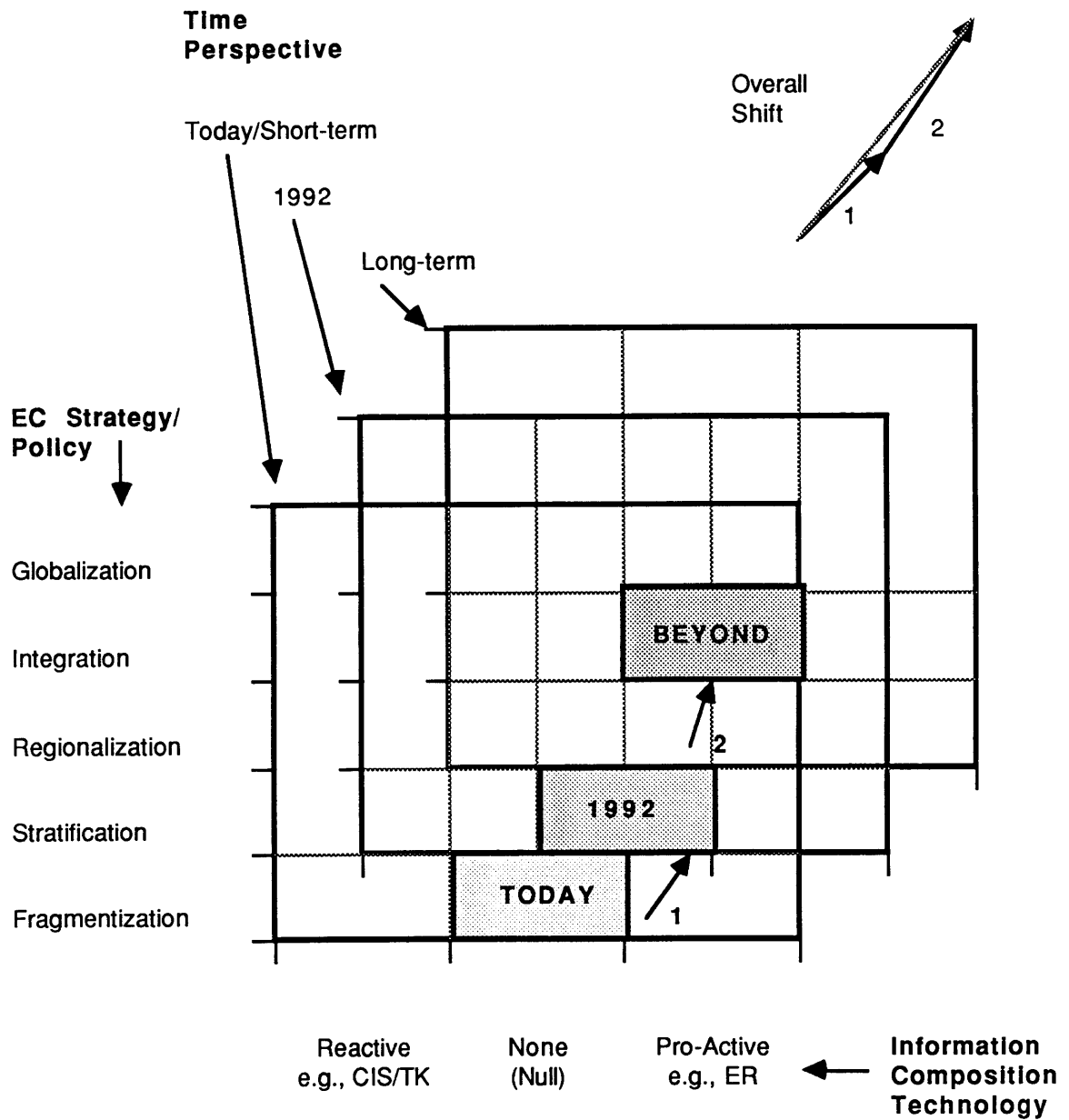


**Bank 3: Shifts in Technology Policies**

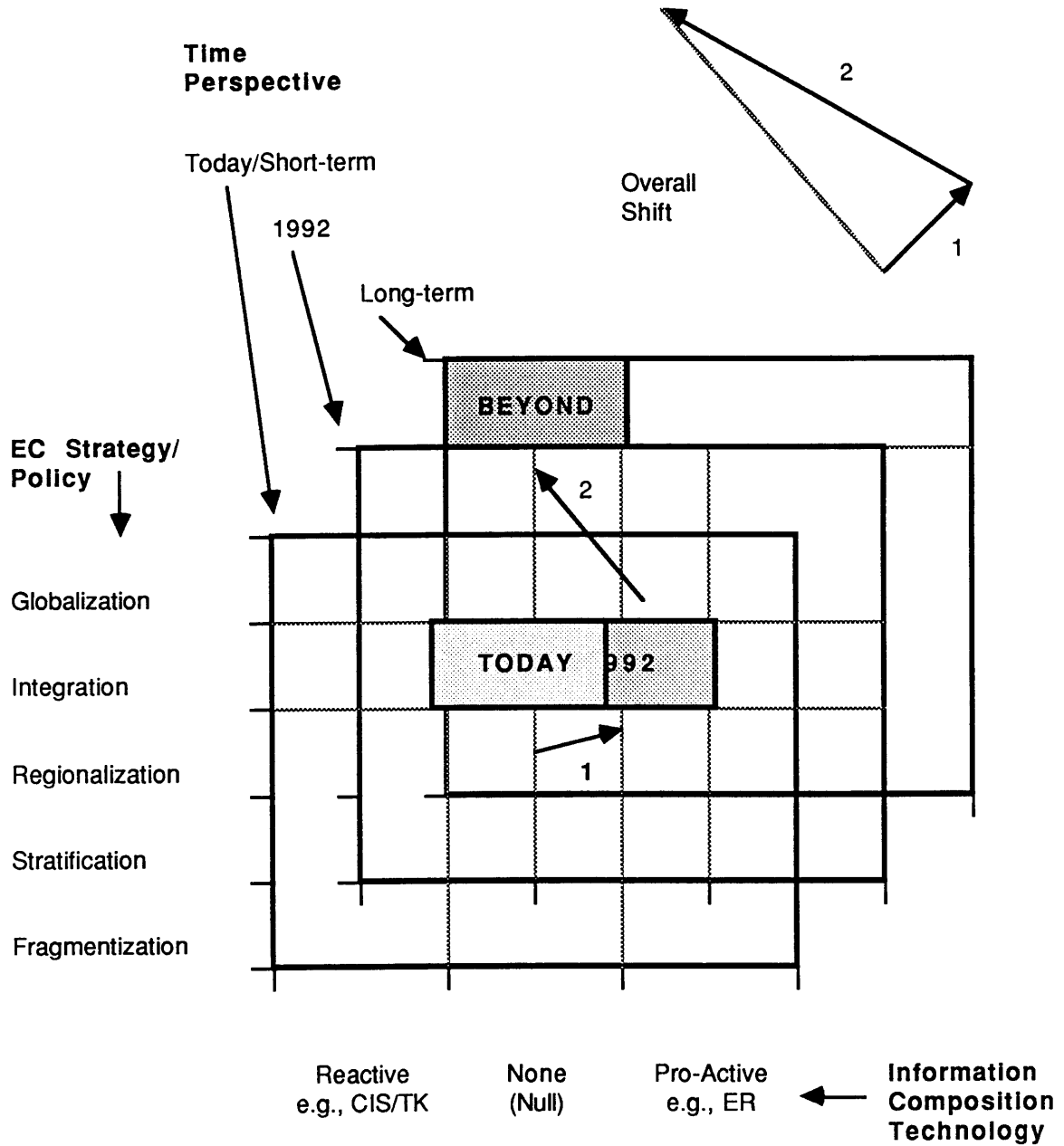




**Bank 4: Shifts in Technology Policies**



**Bank 5: Shifts in Technology Policies**



The need for CIS Tool Kit types in trying to integrate and merge different types of systems over different time spans and as a reactive support to technological changes can possibly be utilized as a technology policy. Where this is not possible, major changes in information systems approaches will need to be seriously looked into.

This section revealed the hidden implications as shifts of technology and the managerial assumptions of their roles for the future in Pan-European space.

#### **4.7. Conclusion.**

These two sets of matrices, the strategic-approaches framework, and the shifts in I/T policies not only help to conclude this chapter in a very concise manner, but also open up issues to address in the long-run and provide a possibility for preparing agendas for the future. In the next chapter, we will provide some recommendations more critically and relate them to the major problems of composing information from the existing systems or from the solutions.

## CHAPTER 5

### INFORMATION COMPOSITION PROBLEMS

#### 5.1. Major Problems/Challenges.

Based upon the research (see Appendix A), various problems and issues that exist at these five banks have been presented in this chapter in two separate formats. First format presents the most important internal problems, the desired market objectives, and the functional MIS problems of each bank. We have tried to remain as close as possible to the verbiage used by the executive(s) interviewed for the respective segment. This has been summarized over two pages for each bank. The problems are classified under the respective headings in a columnized-bullets format.

Second format presents our analysis and critique for each bank for each problem type (internal, external, functional). A column provides the respective solution(s) being envisaged by the bank. We then make critical comments on the possible shortcomings in these solutions and attempt to suggest very briefly a possible direction. This format is tabulated for reader's convenience in comparing the various headings (and, for the more curious, across various banks).

After critiquing the major shortcomings in these reviewed solutions, we *then* point out the possibility of the Composite Information Systems Laboratory (CISL) paradigm being used in addressing the shortcomings. Interestingly, there

are also areas where we at CISL have learned new types of Information Composition problems – unique to the EC unification – where CIS/TK may need to address and incorporate new ‘bridge-types’ and coding in the Tool-kit. Such additions and revisions to the CIS/TK can be of enormous value to the FSI and CEC for possible adoption across the European Communities.

Briefly again, the reasons for providing two formats are:

- (a) Bullet format without our (CISL) relation can be appreciated by the non-technical readers and reproduce the essence of the problems,
- (b) Tabular format has connectivity-related vocabulary and will appeal to functional audiences, being a more specific, technical format.

Whether the information systems in the banks are providing the required strategic support for medium- *and* long-term support (or not) is questionable at the moment. This chapter therefore highlights the banks’ major problems and difficult challenges that need to be pursued with immediacy.

We do not discriminate on the basis of policy shifts here. These have been covered in Section 4.5. As shown in Section 4.6, it can be proved (and we found evidence in all banks) that the Financial Services business is moving much faster than ever before. But there is a growing dissatisfaction that the information systems (the Information Technology translation to reality, in general) is a “lagged effect.”

Learning from the fast pace of deregulation of the U.S. banking industry, the FSI in European Communities would ideally need to learn lessons from the rapid pace of, what we can call, 'forced integration' – forced by perceiving external market forces. Impulsive mergers and acquisitions, based on apparent economic gains, lead to serious difficulties in synergies.

Lack of sufficient synergy causes new kinds of problems in an organization and impede its progress in general. Lots of executive energy and corporate resources get dissolved into attempts at reconciliation of accounts, evolving of a 'new' (*mixed?*) culture, and monitoring of controls.

Ideally, working at a *manageable pace*<sup>1</sup> with a competitive advantage (this can be worked out consciously) would enable the EC region (as a whole) to move forward in new business areas, and nourish its new industries like the FSI. So, lessons on mergers and acquisitions (and other strategic alliances) can be used from the American experience as well as the unique EC situation can be put into the CIS/TK to provide information composition for executives at the top corporate level and the CEC directorate level.

Giving a simple example, the leading EC banks have an urgent need that their I/T investment provides them with 'full-support' to actively engage into the product-geography mixes (Section 4.3) and takes the policy deviations (Section 4.5) as quickly as possible. Thus, the window of opportunity is narrowing rapidly as 1992 gets nearer and the agenda for I/T is very much under

---

<sup>1</sup> To repeat President Jacques Delors' words, 'advancing step-by-step.'

pressure in each of these banks. There are new kinds of problems that need new solutions, promptly.

## 5.2. Bank 1.

On Pages 132-133, the most important internal problems, the markets challenges, and the functional MIS problems of Bank 1 are listed. Next to these are the envisaged solutions by these banks that they are currently examining. Envisaged solution does not necessarily imply that these solutions are already underway and will necessarily be followed, but that they are possibilities under consideration by the executives of the banks for implementation (i.e., as possible strategies and solutions to the problems).

While going through the lists of Bank 1, it is clear that it desires to be a very large bank with multi-products, multi-packaging, and diversity in geographies. It has gone forward with a very aggressive approach into mergers, alliances, joint ventures, and other strategic alliances into every area of the EC region. The bank has a long-term policy to become global and plans to base itself as a *technology* as well as *market* leader by 1992.

In order to acquire benefits of diversification and local autonomy, the bank (as is clear from these charts) is stressing on standardization of Information Technology. **These approaches are in conflict with each another.** The problem is that when you want to go into every sub-region of Pan-Europe and want to present every product, there is a large degree of autonomy and localization that needs to be provided (see Chapter 3) and each sub-region implies some degree of difference in methods, practices, and cultural preferences. Therefore, a

## Bank 1:

### Most Important Problems (Internal)

- Penetration into Europe as a priority
- Enhance participation in local developments (in banking-related)
- Management of variety, versatility and unity
- Keep "systems leadership" position in Europe (be the best)
- Management of systems' complexity

### Market Desired

- Global (geographically)
- Universal (product-wise)
- Get best terms from lenders (offer best terms to borrower)

### Envisaged Solution(s)

- Keep vigilance for M&A's  
Push standards down to new acquisitions
- Decentralize management up to a limit
- Centralize methods and procedures across the board
- Give high profile to MIS
- Place priority on IT applications
- High visibility to automation
- Standardize software processes and macros
- Standardize hardware and communications
- Validate current internal standards

### Strategy Adopted

- M&A's, JV's
- Offer competitive bids and product features
- Regular updating of others' and market information



## Bank 1 - Continued:

### Functional Problems

- Reasonable/Required software often not available in the market
- Treasury systems have time lags
- Keep a close eye on the exchange rates and interest rates
- Internationalization of certain function and managements (heterogeneous markets)
- Test efficiency of national systems (i.e., existing "star" applications) for adoption abroad
- Possible re-definitions of products, services, value-additions

### Envisaged Solution(s)

- Develop own/proprietary solutions
- Extend the scope and functionality of current internal standards scope/functionality
- Use "passing the book" to its "best"
- Participate actively in European efforts for a Global Custody System
- Develop different cultural solutions for regions but maintain "common" interfaces across the board
- Use ECU as standard
- Develop benchmarks
- Use latest industry standards (e.g., UNIX, SQL, etc.)
- OLTP throughput rates
- Develop a sharp sensitivity to customer response time and services times in different regions
- Build in market sensitivities
- Semantic name matching
- Instance matching
- Temporal updating frequencies

standardized approach towards a hardware platform and software solutions will not only be expensive to implement in the first place, but may also not address the issues it is set out to meet.

Still, Bank 1 is trying to continue developing its internal standards and foresees pushing these standards on to all other countries where its branches exist as well as on all new acquisitions it makes. Keeping in view the fact that Bank 1's spending on internal development has been very high, it does not want to 'purchase outside solutions.' Bank 1 thinks that internal development is at a reasonable threshold for it to use and standardized software deployment will be very possible by 1992.

We found that this anomaly between *expectations and perception of a standard* and the actual *possibilities of managing standards* across the board is a serious one. Bank 1 should seriously consider hybridization (see Section 2.17 and Chapter 6) to try to get near a workable solution for its intended expansion on a *fully regional* basis.

### **5.3. Bank 2.**

Pages 135-136 list the problems, strategies and envisaged solutions of another large bank, comparable to the first one in size and assets. As clear from the problems and strategies, this bank is looking into a strategy of niche market *combined with* universal banking. It is foreseeing itself as a player which can act in certain specific geographies as only an investment bank (niche) and in the others, in particular, the home country, as a universal bank with products and packages of sorts.

## Bank 2:

### Most Important Problems (Internal)

- Conciseness of Information (Succinct Executive Information)
- Static Systems (have not changed much but markets have)
- Provide integrated information for negotiations with clients/customers
- Hardware platforms and communication protocols differ throughout the bank
- Approach overall integration in the long-run

### Market Desired (External)

- Global image desired, faster
- External information needs to be meshed with internal information for certain (market) indicators
- Capture larger markets, faster
- Universal products

### Envisaged Solution(s)

- Complete development of Executive Information System (EIS) that is approximately 70% complete
- Put all (as much) data into the system = bigger is better
- Patch certain internal systems as improvements to outsmart competitors
- Standardized hardware platform on a vendor and the network of another vendor, each distinguished for its specialty
- Use two vendors for overall (global) integration; one for domestic and one for international (Dual standards.) Yet, keep "atomic" data also.

### Strategy Adopted

- EIS will provide executives with the details on all kinds of clients whom they need to approach to provide a portfolio of services all over the globe
  - Advocate/Develop common standards to "filter" all external data in common formats and "meanings"
  - Small takeover or alliances
  - Enhance customer database
  - Update product tables regularly
  - Update regional data regularly
  - Maintain dual standards (geog.)
    - Domestic French
    - International
  - Maintain dual practices
    - Anglo Saxon
    - Other
- These will be sufficient to cover markets where most of the competition will be

## Bank 2 - Continued:

### Functional Problems

- Pressure to provide correct and timely information to large clients
- Customers are smarter and ask different questions (the answers to which competitors may provide)
- Provision of profitability per customer, profitability per product (Monopoly lost)
- End users cannot ask questions in a structured way -- SG is late in the case of answering queries
- File-linking for running certain programs to provide "integrated" answers. Correctness of analysis doubtful ???

### Envisaged Solution(s)

- While keeping data elemental, produce reports in a good, composed manner, regularly
- Accelerate development and implementation of the "standards" effort throughout the bank. Enable questions to be structured or convertible to structures to which answers can be readily pulled from the system.
- Develop standard systems for aggregating and processing this information at each geography -- later across geographies for large customers
- Develop good front-end tools based on a DBMS that can translate these queries optimally
- Again, standardize data structures and translate all files to that structure before running the systems sequentially

The systems solution envisaged by this bank is also somewhat standardized. However, it does realize that their combined strategy will coexist to address the requirements of bridging across the systems used in this bank. Bank 2 has a *slightly* lesser aggressive market objectives than Bank 1 but also slightly more realistic Information Technology solution also. However, there is a conflict in their case as well.

The fact that Bank 2 desires keeping data atomic – while also composing information at the executive level – requires a lot of redoing the internal systems. This can be very unrealistic in terms of the two years window of opportunity. This strategy may be possible in the long-run but then the strategic and business objectives of the bank in becoming market leaders in the home country and niche leaders in subregions may not necessarily be fully accomplished using this systems strategy.

Another important thing to note about this bank is that it stresses heavily on Executive Information Systems. They believe that if executives have the support of Information Technology, they will be able to set realistic objectives and in fact steer the bank as industry leaders. However, as mentioned above, unless the solution provides a fail-safe bridge between the heterogeneous systems and the dual standards coexisting in the bank, it will not be possible for it to take advantage of its current strategy and placing among EC FSI leaders.

Bank 2 also has a long-term objective. It is not necessarily to become a global player, but to *integrate* its niche markets that it would have developed in the sub-regions. The bank wants to remain universal in its home base and adjoining countries and later on, unify its niche markets across the EC region. In

this dual pronged manner, it hopes to become a regional leader of universal products beyond 1992.

Some degree of globalization is also contemplated and some value chain integration in the industry as a strong possibility in the long-run is also under consideration. The bank has a more focused and a more realistic IS policy when compared to the Bank 1, but does not necessarily meet its own objectives through its Information Technology solutions today.

#### 5.4. Bank 3.

On Pages 139-140, we present the problems, strategies and solutions envisaged by the third bank that we visited.

Major part of this bank's business is single product and it tries to focus on a niche market. Its main concentration is on investment banking, but does provide some degree of non-investment banking facilities and services to its important clients in certain specific geographies. The bank does *not* intend to become a universal bank in totality, in spite of Pan-European privileges of 1992 and the provisions of the Second Banking Coordination Directive.

The strategy of Bank 3 is to become more focused in investment banking, in expanding in the market, and concentrating in the geographies it already is in, but with special focus in the EC region now than it provided before. In the past, this bank has focused on its home country and some of the former colonies of the home country. It now looks at Pan-Europe as a major opportunity in expanding itself with the same product and a possibility of providing few other

### Bank 3:

#### Most Important Problems (Internal)

- Different banking practices across borders due to law, culture, people
- International consolidation (Automated)
- Get tax benefits with different tax rates existing and varying
- Country-based, company-based, information required and also product consolidation

#### Market Desired (External)

- Niche (Investment)  
Some universality occasionally
- International (Asia, Africa, Europe, some offices in Americas)

#### Envisaged Solution(s)

- Translate and understand comparing with equivalent practices
- Respect and maintain local content and share
- A partially successful solution provided by a consultant (but largely, manual system)
- Rapid consolidation required to provide this information.  
NO SOLUTION
- Need composition of information across customers, regions, products on different platforms. NO SATISFACTORY SOLUTION YET
- Define consolidation, related terms
- Core/Central information versus regional ??

#### Strategy Adopted

- Focusing mostly on investment opportunities
- Several branches and local offices in the world

### **Bank 3 - Continued:**

#### **Functional Problems**

- Analysis of corporations that are being examined for M&A
- Provide information on global exposure of a large company (spread out geographically)
- Build an integrated system throughout bank
- Old and new systems need to be separately updated and differently synthesized for results

#### **Envisaged Solution(s)**

- No standard system that will make this possible. NO SOLUTION
- Risk is "reasonably" understood
- Develop sophisticated systems
- Consolidation of inter-temporal, different cultural, different currency, etc., system is NOT currently possible on-line
- Standardize on hardware now
- What to do with existing system?
- Cross system connectivity -- a major issue
- Too time consuming
- Develop a tool kit



products and services only to selected clients of their investment banking business. The bank has several information technology platforms. Its hardware and software solutions and the experience of people in the systems department is very diverse. Also it has a different evolutionary story to tell about itself. The possibility of integrating and composing information from such diverse systems is already in the minds of the executives, but they do not have a clear and workable solution in the organization yet.

Bank 3 would like to – in the very long run – be a global player, but in the short- to medium-run, a regional investment bank which can provide Information Technology for networking throughout the region and providing composed information to important clients that are investing in the activities of the bank. So, an external integration will be mandatory for Bank 3.

The biggest problem in this bank is that the consolidation of statements and accounts takes place very heterogeneously, and the greatest heterogeneity is that of temporal differences among systems. What is important here is to try to bring the cycles of run times and reporting times in harmony with each other, so that consolidated reports are possible for each of the sub-regions that the bank intends to go into.

Because of the free flow of capital and mobility of people and investment throughout the region, it may not be sufficient to only focus on a subregional basis but to have an interface throughout the subregions.

The bank has some new managers in its IS department who are aggressively trying to integrate the system throughout the bank. The solution

that they are also proposing is to standardize on the hardware within the next two years *while also* keeping the systems of the old hardware intact so that two different parallel runs could be run and composition of information – even though heterogeneous – will have fewer components to assimilate together than the current ones. In other words, Bank 3 would have fewer disparate systems and platforms in the near future than what they have at present. Still, there will be problems of integrating across.

#### **5.5. Bank 4.**

Page 143 shows the problems, solutions, and desired positions by another investment bank. In fact, it is in competition with Bank 3.

Bank 4's history of Information Technology is not very sophisticated. The management does realize this. However, the bank's emphasis is less on systems today serving the short-run. Its stress is more on understanding the business correctly and in being able to set up strategies to acquire a large size of that business.

Information technology is playing a *minor* role in the organization today because its managers and middle level executives are not very highly trained in systems technology yet. The bank thinks that it will be able to get into a competitive advantage in the medium-term because it is investing heavily into the training of its managers, executives, and even the officers to becoming conversant with computers of sorts.

## **Bank 4:**

### **Most Important Problems (Internal)**

- Adoption of IT is late/little
- Measure risks effectively to remain on "safe" ground
- How to become better than competition
- Lack of closely-knit branch network

### **Market Desired (External)**

- Niche (only investments)
- Provide tailor-made solutions to clients/customers
- Different regions in Europe (but not too far out)
- Link into treasury trading for stocks (not bonds)

### **Envisaged Solution(s)**

- Training of people at all levels
- Beginning at top
- Provision of PC's
- Study and document
  - risk types
  - systems for checking
- Outsmart their systems
- Outdo their service
- Focus more on niche
- Reduce costs, when possible
- Common tools and indexes to provide such information as is needed on bench performer
- Information on owned banks

### **Strategy Adopted**

- Remain highly focused
- Provide detailed analysis (now needs) automation
- Manage safely
- Have common tools
- Maintain standard systems
- Study entering custodial markets

The objective of the bank is to remain a single niche product player and to focus on its home base and few neighboring nations only. It has a sub-regional outlook within Pan-Europe. In the long-run, it does not necessarily see a global future, but wants to remain oriented towards the investment markets with customers primarily in the important sub-regions of Pan-Europe.

The Information Technology role that the executives of Bank 4 see is also more focused in the long-run than in the short- or medium-run. The bank, in fact, is in a good position of not having too many disparate systems in place that it has to integrate to get competitive advantage. Bank 4 is almost like a clean slate, ready to bring a new technology that will have the possibility of composing information along and across the board.

It is looking into solutions that will be possible in the long-run. It will not miss out on the window of opportunity of 1992 due to fewer but more strong customers that provide business deals and prospects in a strong subregions of this bank.

The current plan of the bank in trying to compose information is to try using physical level connectivity through an architecture that will provide sufficient information to move around. Logical and organizational connectivities will be investigated into in due course.

## **5.6. Bank 5.**

Pages 145-146 show the status at Bank 5. This bank has also merged in the recent past. It is having serious problems of synergy in the back office. Its

## Bank 5:

### Most Important Problems (Internal)

- Synergy of two different systems (Bank A & Bank B)
- Extraction of information for top-level consumption
- Systems' updating does not have uniform timing
- Centralize information availability while decentralizing operations

### Market Desired (External)

- Universal products
- World Wide Geography (Initial European and Colonies)
- Diversification as well as penetration
- Always keep scale, not scope, in mind

### Envisaged Solution(s):

- Push technical (physical) connectivity as much as possible
- Choose one of the two systems in each application class; performance
- Live with 'natural' time lags in systems due to inherent tech. status
- Encourage E-mail usage
- Have regular meetings to consolidate
- Think solutions for tomorrow
- Define interfaces to be developed for LR

### Strategy Adopted

- Merger (economic); reduce costs
- Changing Customers' Perceptions (of Products, Competitive Positions, etc.)
- Automation (ATM's) and branch networking (initially only local, European)
- Be visible 'everywhere,' i.e., get the advantage of geographical positioning

## Bank 5 - Continued:

### Functional Problems

- Quick answers to clients and customers (joint position)
- Consolidation for the center (i.e., head office system)
- Managing of customer and related data
- Need for computing for functional work at regions/cities
- Politics -- how to satisfy sections in the banks whose systems are dropped in favor of the other bank
- Random query time (and structuring of the query)
- Traditional bookkeeping difficulties
- Heavy user requests and increasing Software Development Life Cycle (SDLC) workloads; maintenance

### Envisaged Solution(s)

- Confusion ? (Wait-and-see)
- Think about Executive Support System (ESS) in the long run
- Develop a client database and phase-out account database
- Considering developing standard applications and solutions for all expansions
- Develop good definitions and perceptions of fundamental entities (like data, customer, region, deal, etc.)
- From initial 2-3 days (with 90-95% reliability) to the totally unpredictable one now (in time and reliability)
- Used a specific vendor's DBMS architecture that seems to be working well
  - Create cosmetic effect
  - Convert to a better system (DBMS)
  - Develop Distributed Systems
- Create end-user environment in the long-run. No solution for short-run.

main objective was to become a leader through market perception. This it has already achieved. Rising from q position in the lower echelons of the Top 50 Banking list, to now being ranked among the top few, Bank 5 has indeed been able to capture the attention of important businesses. It has also been able to thereby acquire more business contacts and networking.

In the short- to medium-run, the bank intends becoming an EC region wide player of universal products. In the very long-run, it does foresee globalization as well, but not a *total* globalization. The two banks together have around 40 countries in which they are operating. Thus, some degree of globalization is natural in their minds.

However, this is more a long-term objective than a short- to medium-term one, which is to become a universal bank throughout Pan-Europe and in fact move northwards in the areas where the banks from the southern parts of EC have not even moved yet.

The Information Technology issues of this bank are typically those of back-office synergies and of value judgments on selection of systems from a diverse portfolio. The two sets of portfolios that have resulted from the merger of two banks are not at all complementary to each other.

The platforms are different. The software solutions have been developed with different design parameters. The people do not have the same degree of conversant on the systems involved. The evolution of the systems have taken place over different periods of time under different managerial assumptions and styles.

This is a classic case of synergistic disillusionment after reaping the marketing and economic benefits of merger and acquisition. The bank now has – on top of its agenda – to resolve this back office synergy. All possible problems that one thinks of when synergy can not be completed, exist in the back office of Bank 5.

What is praiseworthy, however, are two facts :

- 1 That management is aware of this problem and accepts it as the first step to overcome,
- 2 That management is actively investigating into possible solutions that can help total synergy become a reality in the heterogeneous Information Technology era of today.

Bank 5 also knows that if it wants to become the kind of player it is positioning itself to be, it has to go into higher degrees of automation in the outside world. Therefore, it is looking into installing ATM's (Automatic Teller Machines) and networking these throughout the Pan-European region. This is a case of transaction processing that will need to be addressed at some point in time by this bank – especially when *integration* of transaction processing with the other data resources becomes a necessity.

### **5.7. Focusing on CIS Relationships.**

Before focusing on the relationship of the problems and plans of these five banks to the Composite Information System paradigm presented in Chapter 6, we would like to point out that there is no such thing as a **perfect bank** or a **perfect market** or an **ideal strategy**. Each bank mentioned here has been



questioned critically by us without any bias. An important aspects of this thesis is to bring to light the problems that consciously or subconsciously have existed in the bank. We also wanted to see the degree of disparity between the strategies desired by these banks (for EC and the long-run), and the information technology condition and solutions envisaged by them.

Pages 150-164 present tables labelled “Envisaged Systems Priorities.” These relate the different types of problems (or difficult objectives) of each bank that we researched into and our assessment of the shortcomings of their solutions under consideration. Our understanding as to how CIS could relate to these shortcomings and where CISL’s Tool Kit can provide positive assistance is provided in the last column of the tables.

Let us remember two things while reviewing these tables.

One is – as mentioned before – that there is no ideal bank *or* situation *or* solution simply because of the nature of evolution of Information Technology. This is further complicated by the differences, over periods of time, in organizational development styles within each bank. So, it is beyond the control of any bank to have had a *harmonious* policy for a technology evolving with such a rapid pace and having deployment possibilities in many diverse situations. And it is also imperative that the management continually addresses the business challenges which are themselves always in a state of flux.

Secondly, with the growing success of Information Technologies over the last two decades, the banks penetrated different divisions, departments, and sections in banking. Each time that an application was developed, it was done –

**ENVISAGED SYSTEMS PRIORITIES**

**Bank 1**

EXTERNAL PROBLEM	SOLUTION CONSIDERED	ITS SHORTCOMING	CISL RELATION
Aim at becoming largest; merge or align with others in Europe	Heterogeneous systems will retard expansion Need to institute same standards everywhere	<ul style="list-style-type: none"> <li>• Current standards may not be helpful <i>everywhere</i></li> <li>• Legal problems will crop-up in different locations; <i>resistance</i></li> </ul>	<ul style="list-style-type: none"> <li>• Cost of conversion to standards can be prohibitive</li> <li>• Fast interface is essential here</li> </ul>
<i>Passing-book</i> has limited usage in custodial and securities systems	Buy a third-party custody system or participate in one to get ahead Use SWIFT or CEDEL Go real-time Keep unique ID's for accounts	<ul style="list-style-type: none"> <li>• Without some localization, globalization cannot happen</li> <li>• Newer connectivity issues will surface with <i>temporary</i> solns</li> <li>• Incompatible with high-volume</li> </ul>	Same as above
Difficult to interpret definitions of terms in different regions/customs	Use internal <i>Common Language</i> for describing all banking activity. Redefine standards inter-temply. Business complexities resolved at bus. level (e.g. ECU) so, EC will harmonize issues in Europe.	<ul style="list-style-type: none"> <li>• Problematic composition of information across boundaries</li> <li>• New product introduction will cause new problems/delays</li> <li>• Inherent problems in incorporating cultures into standards</li> </ul>	<ul style="list-style-type: none"> <li>• Positively requires an interface to accomodate all customer and product types</li> <li>• Save time (i.e. profits) by not standardizing all cultures at one place; use 80-20 rule.</li> </ul>

**ENVISAGED SYSTEMS PRIORITIES**

**Bank 1**

<b>INTERNAL PROBLEM</b>	<b>SOLUTION CONSIDERED</b>	<b>ITS SHORTCOMING</b>	<b>CISL RELATION</b>
Wholesale (at <u>world</u> level) and Universal (at <u>European</u> level)	Extend domestic systems to other EC countries; keep niche in whsl.	<ul style="list-style-type: none"> <li>• Expansion has limitations</li> <li>• Balancing systems will be diffult.</li> <li>• Loan summaries still need global real-time updation</li> </ul>	<ul style="list-style-type: none"> <li>• Provision of parallel pursual of dual strategies</li> <li>• Real-time updations at some intermediate level ?</li> </ul>
Homogenization of small banks taken over in other countries	Parent them into using existing company-wide systems	Same as above	Same as above
Decentralization is narrow but expansion is diverse/disparate	Increase scope of internal stndards Main updations in home country <i>but</i> functional work at branches	<ul style="list-style-type: none"> <li>• Contradiction among philosophies of <i>flexibility</i> and stdzn.</li> <li>• Customers engaging in simultaneous transactions will flaw?</li> </ul>	<ul style="list-style-type: none"> <li>• Provision of hybridization between center and branches</li> <li>• Arriving at good definition of standardization</li> </ul>

**ENVISAGED SYSTEMS PRIORITIES**

**Bank 1**

FUNCTIONAL PROBLEM	SOLUTION CONSIDERED	ITS SHORTCOMING	CISL RELATION
Rapid growth and unprecedented expansion is too system-intensive	Quickly respond by expanding Co network, software, hardware to all expanded areas. Go real-time. Use ISBA.	<ul style="list-style-type: none"> <li>• Different cultures will resist even <i>temporary</i> imposition of home country standards</li> <li>• Costs of real-time in such vast expanse can be prohibitive</li> </ul>	<ul style="list-style-type: none"> <li>• Provision of local autonomy while sharing one <i>parent</i></li> <li>• Real-time perception is necessary</li> <li>• Heavy currency conversion</li> </ul>
Defining “standardization” for developing programs, macros, procedures, etc. to all locations	Widen scope to include manual and other procedures Choose selected (fewer) systems and gain time, money efficiencies	<ul style="list-style-type: none"> <li>• Limitation on universality of standardization</li> <li>• Choice is limiting, costs may go up in long-run.</li> </ul>	<ul style="list-style-type: none"> <li>• Allowance for local management to process <i>before</i> despatching to central system(s)</li> <li>• Shape technology to meet needs of business, not reverse.</li> </ul>

**ENVISAGED SYSTEMS PRIORITIES**

**Bank 2**

<b>INTERNAL PROBLEM</b>	<b>SOLUTION CONSIDERED</b>	<b>ITS SHORTCOMING</b>	<b>CISL RELATION</b>
Urgent need for ESS (especially customer and market information)	Use the strong underlying a/c- based DBMS Focus on all customers (not just the large ones)	<ul style="list-style-type: none"> <li>• Not feasible for very high transaction rates</li> <li>• Data formats will still vary</li> <li>• Anglo-Saxon practices differ from other regions</li> <li>• Executives will not readily express their reqremnts./queries</li> </ul>	<ul style="list-style-type: none"> <li>• Provide logical connectivity</li> <li>• Faster currency translation</li> <li>• Faster customer a/c translation</li> <li>• Prioritize negotiations data</li> <li>• Enable clean dictionary</li> </ul>
Costs of verification of information	On-line ESS based on modular OLTP	<ul style="list-style-type: none"> <li>• Data, formats, old data, etc. still in flat-file structures</li> </ul>	<ul style="list-style-type: none"> <li>• Provision for translation of rapid flat-files for DBMS usage</li> </ul>

**ENVISAGED SYSTEMS PRIORITIES**

**Bank 2**

<b>EXTERNAL PROBLEM</b>	<b>SOLUTION CONSIDERED</b>	<b>ITS SHORTCOMING</b>	<b>CISL RELATION</b>
Aim: Create a SUPERB Global image	Develop non-atomic DBMS to get global views of customers SR=Continue using Global Book LR=Develop own Global systems	<ul style="list-style-type: none"> <li>• Desired response time and quality may vary, is problematic</li> <li>• <i>Closed</i> countries' information may not be on-line or available</li> </ul>	<ul style="list-style-type: none"> <li>• Help build standard queries?</li> <li>• Need for logical connectivity</li> <li>• Simultaneous updation will be required if opt= 'totally global'</li> </ul>
Market is perceived in segments but such matrix non-existent in systems	Systems are investigating internal DBMS applications to cater for faster transaction rates	<ul style="list-style-type: none"> <li>• <i>Composition</i> and <i>ranging</i> not possible on many current systems</li> </ul>	<ul style="list-style-type: none"> <li>• Translate standard querries as <i>ranges</i> of customers</li> <li>• Provide for upgradings</li> </ul>
Combine external data on markets industry, community, competitors etc.	Again, use ESS with market data fed in to the DBMS Information on customer portflios will be a great plus	<ul style="list-style-type: none"> <li>• Data inclusion will have limits</li> <li>• Data storage/backup will be prob</li> <li>• Portfolios need aggregation over several products</li> </ul>	<ul style="list-style-type: none"> <li>• Enable consolidation across products for each and every customer even when data exists not on client database.</li> </ul>

**ENVISAGED SYSTEMS PRIORITIES**

**Bank 2**

<b>FUNCTIONAL PROBLEM</b>	<b>SOLUTION CONSIDERED</b>	<b>ITS SHORTCOMING</b>	<b>CISL RELATION</b>
Too much data, growing too fast hinders conciseness	<i>Cleanse</i> the current data overload by storing in non-atomic format (diagram)	<ul style="list-style-type: none"> <li>• No definite as to how much data will be <i>just enough</i></li> <li>• Data classification and quantification is costly</li> </ul>	<ul style="list-style-type: none"> <li>• Provide for spread-out and <i>Thinned</i> data over several relevant locations</li> </ul>
Growth is itself growing fast	Standardize modules. Develop on these standards. Avoid complexities at <i>clerical</i> level. Have common software.	<ul style="list-style-type: none"> <li>• Very simplistic assumptions</li> <li>• Standardization <i>nirvana</i> may take longer than imagined</li> <li>• Does not account for <i>local</i> chngs</li> <li>• New software needs emerge</li> <li>• Parameters always change</li> </ul>	<ul style="list-style-type: none"> <li>• Provision of sophisticated updation possibilities</li> <li>• Quicker learning curve possible</li> <li>• Multi-currency, multi-time zone, required</li> <li>• Translation across HW, SW, OS</li> </ul>
Development of two systems portfolios (one for home country, the other for rest of the world)	Same as above	<ul style="list-style-type: none"> <li>• Needs two standards, afterall</li> </ul>	<ul style="list-style-type: none"> <li>• Same as above</li> </ul>

**ENVISAGED SYSTEMS PRIORITIES**

**Bank 3**

<b>INTERNAL PROBLEM</b>	<b>SOLUTION CONSIDERED</b>	<b>ITS SHORTCOMING</b>	<b>CISL RELATION</b>
<p>Imposing internal standards is causing problems</p> <p>Distortion of information as it is passed on within the organization</p>	<p>Use some hybrid approach Still thinking</p> <p>Develop core information base to store atomic data Investigate <i>info sharing</i> across different companies/banks</p>	<ul style="list-style-type: none"> <li>• Current practice provides only <i>approximate</i> view of accounts.</li> <li>• Will cause heavy traffic one-way; to the center</li> <li>• Unless standard everywhere, database may not be shareable</li> </ul>	<ul style="list-style-type: none"> <li>• Accuracy</li> <li>• Saving duplication</li> <li>• Same as above</li> <li>• Provide organizational connectivity</li> </ul>
<p>Different products offered to some selected clients only</p>	<p>Use in-house developed commercial system (now in ten branches)</p>	<ul style="list-style-type: none"> <li>• Highly centralized stance</li> <li>• Needs careful proliferation</li> </ul>	<ul style="list-style-type: none"> <li>• Build-in definitions of different branch requirements</li> </ul>
<p>Virtually no flow of information across branches</p>	<p>Use Passing Book for 1992 Build-in authorization levels for dealers</p>	<ul style="list-style-type: none"> <li>• Physical + Logical connectivity necessary</li> <li>• Authorization may need some decentralization</li> </ul>	<ul style="list-style-type: none"> <li>• Allow for hybrid approach in dealer-HO network</li> <li>• <i>Generalized</i> restrictions</li> </ul>



**ENVISAGED SYSTEMS PRIORITIES**

**Bank 3**

<b>EXTERNAL PROBLEM</b>	<b>SOLUTION CONSIDERED</b>	<b>ITS SHORTCOMING</b>	<b>CISL RELATION</b>
Consolidation for Executive use	Use consultant-provided pattern Use IBM, IDEAL, & DATACOM	<ul style="list-style-type: none"> <li>• Varying usage levels across regions may need more than one pattern</li> <li>• Consultant patterns can be <i>fully</i> owned?</li> <li>• Regulations change in regions</li> </ul>	<ul style="list-style-type: none"> <li>• Provision for different procedures across regions</li> <li>• Efficiency considerations</li> <li>• Physical + Logical connectivity</li> </ul>
Aim: Gain maximum tax advantage across regions	<i>Optimize</i> fiscal and tax processes through standardization	<ul style="list-style-type: none"> <li>• Dilutes good consolidation</li> <li>• Rates vary all times, everywhere</li> </ul>	<ul style="list-style-type: none"> <li>• Numbers need to be exact for good results (validation checks)</li> <li>• Timeliness</li> <li>• Structural, analyzable info. need</li> </ul>
Perpetual risk of being taken over	Use new sophisticated automation to provide analysis on markets and customers	<ul style="list-style-type: none"> <li>• Throughput levels may be higher than consolidation permits</li> <li>• Aggregation/segregation may be faulty still</li> </ul>	<ul style="list-style-type: none"> <li>• High degree of aggregation needed at central level</li> <li>• Accuracy + Timeliness is necessary for <i>all</i> clients</li> </ul>

**ENVISAGED SYSTEMS PRIORITIES**

**Bank 3**

FUNCTIONAL PROBLEM	SOLUTION CONSIDERED	ITS SHORTCOMING	CISL RELATION
Rapid consolidation for tax benefits	Still considering Discussing with consultants	<ul style="list-style-type: none"> <li>• In <i>one</i> system, consolidation and optimization are opposing goals</li> <li>• Different closing dates</li> <li>• Some data,system overlaps</li> </ul>	<ul style="list-style-type: none"> <li>• Provide both systems while also consolidating</li> <li>• Information required by country, company, and specific business bases</li> </ul>
Market segmentation	Develop hybrid approach Standardize <i>across</i> several data platforms	<ul style="list-style-type: none"> <li>• May confuse at a higher level</li> <li>• Cross-communication not always possible</li> <li>• Not sure if best approach</li> <li>• Different market closing times</li> </ul>	<ul style="list-style-type: none"> <li>• Same as above</li> <li>• Reconcile regional practice differences on computer</li> </ul>
Dis-satisfaction with Bank's central databases	Develop new systems internally, and quickly. Use ER diagraming and DB2 as standard language	<ul style="list-style-type: none"> <li>• Two systems (one old, other new) co-running</li> <li>• ER needs more detailed analysis at lower levels (latices)</li> <li>• Standardization not a complete solution</li> </ul>	<ul style="list-style-type: none"> <li>• Logical connectivty</li> <li>• Interface across two internal systems</li> <li>• Inter-regional connectivity</li> </ul>

## ENVISAGED SYSTEMS PRIORITIES

### Bank 4

INTERNAL PROBLEM	SOLUTION CONSIDERED	ITS SHORTCOMING	CISL RELATION
Improve Personnel Efficiency in Computers	Training and Development	<ul style="list-style-type: none"> <li>• Old generation will still persist and avoid change</li> <li>• Mainframe will still be far away from them</li> </ul>	<ul style="list-style-type: none"> <li>• Data usage from central site</li> </ul>
First or Second Generation Systems people in IT Division	Phased-out retirements and/or transfers Suncontract software development to consultants	<ul style="list-style-type: none"> <li>• Careful: law prohibits layoffs</li> <li>• Customization not fully reliable through consultants</li> <li>• Own learning-curve impeded</li> <li>• Results may not be as desired</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate cross-systems connectivities</li> <li>• Demonstrate cost/benefit to get management to step-up</li> </ul>
Matching of risks (owing to other banks owned by parent)	Standardize risk-related software, hardware, and connectivity Develop an extensive set of indexes for answers from system	<ul style="list-style-type: none"> <li>• Standardization time will be long</li> <li>• Standardization costs will not offset T&amp;D costs</li> <li>• Standards themselves are disparate (trading room vs. Co.'s)</li> <li>• Novell does not provide all solns</li> <li>• Increases in volume &amp; business will delay static indexes</li> <li>• Risk system being very elaborate will require sophisticated usage</li> <li>• Fast expansion needs consonant systems progress</li> </ul>	<ul style="list-style-type: none"> <li>• Cross-system connectivity needs to be gradually built in for:                             <ul style="list-style-type: none"> <li>-Mainframe to PC connectivity</li> <li>-Across PC's</li> </ul> </li> <li>• Data Backup</li> <li>• Providing bridge on parameters</li> <li>• Matching of standards</li> <li>• Matching of Operating Systems, Languages, Platforms, etc.</li> </ul>

**ENVISAGED SYSTEMS PRIORITIES**

**Bank 4**

<b>EXTERNAL PROBLEM</b>	<b>SOLUTION CONSIDERED</b>	<b>ITS SHORTCOMING</b>	<b>CISL RELATION</b>
Pursue a niche strategy (Focused markets only)	Focus inwardly Develop outward through T&D Penetrate not expand	<ul style="list-style-type: none"> <li>• Top management not highly computerate - implementation will still take lot of time</li> <li>• Markets are growing faster than imagined - provision?</li> </ul>	<ul style="list-style-type: none"> <li>• Expose only the <i>twilight</i> parts of the Tool Kit</li> </ul>
Information is required at three levels (A/c system, Interest rate exposure, liquidity position)	Use SWIFT Again, use T&D with PC's	<ul style="list-style-type: none"> <li>• Sophistication is needed to handle these three different types</li> <li>• Linking to other dealers and systems will be needed for GC</li> <li>• Explain current stalling situation</li> <li>• SWIFT not with end users</li> </ul>	<ul style="list-style-type: none"> <li>• Same as above.</li> </ul>

**ENVISAGED SYSTEMS PRIORITIES**

**Bank 4**

<b>FUNCTIONAL PROBLEM</b>	<b>SOLUTION CONSIDERED</b>	<b>ITS SHORTCOMING</b>	<b>CISL RELATION</b>
<p>Aim: Keep simple. Don't pursue sophistication.</p>	<p>Do periodic updates of systems on product and risk bases only. Shift focus from heavy processing to quick, local information</p>	<ul style="list-style-type: none"> <li>• Data structures still differ across files and existing systems</li> <li>• Maintenance will still be problem</li> </ul>	<ul style="list-style-type: none"> <li>• Consolidation on clients <i>and</i> A/c needed</li> <li>• Some retail banking for local customers needs logical connectivity</li> <li>• Different branches have different systems - provide connectivity</li> </ul>
<p>Decentralized Departmental Computing</p>	<p>Use PCs and give executives time to learn Empower newly created Special Development Department Use CONTACT database</p>	<ul style="list-style-type: none"> <li>• Risks would not be possibly evaluated accros the board by disparate PC's</li> <li>• Not all old systems can work on CONTACT</li> <li>• Consolidation on counter-parties not possible this way</li> <li>• Logical connection takes too much time</li> </ul>	<ul style="list-style-type: none"> <li>• PC-level cross-connectivities</li> <li>• Updations/etc. need detailed authorization</li> <li>• Develop a common structure for implementing CONTACT</li> <li>• External/organizational connectivity necessary</li> </ul>

**ENVISAGED SYSTEMS PRIORITIES**

**Bank 5**

INTERNAL PROBLEM	SOLUTION CONSIDERED	ITS SHORTCOMING	CISL RELATION
Completing the merger; achieving synergies	Proliferating connectivity Keeping information atomic Using consultants	<ul style="list-style-type: none"> <li>• Technological obsolescence over time will crop up</li> <li>• Afraid if everything interconnect</li> <li>• Customers may still not get full picture</li> <li>• Total alignment questionable</li> </ul>	<ul style="list-style-type: none"> <li>• Technical connectivity is lowest plane; need higher levels</li> <li>• Atomic information at center will cost heavily; provide spreads</li> <li>• Study details of systems portfolios and detail specs for cross-connectivity needs</li> </ul>
Aim: Containing costs	Centralize and coordinate. Reduce manpower. Acquire efficiencies envisioned in the merger.	<ul style="list-style-type: none"> <li>• Cost fusion among two banks' portfolios need sound bases</li> <li>• Law prevents layoffs; moving people around and adjusting</li> <li>• Without heavy I.T. investments, more PC's and ATM's not pos.</li> </ul>	<ul style="list-style-type: none"> <li>• Remove need for several diff. runs of different systems</li> <li>• Save time (and money) on a <i>unified</i> processing.</li> </ul>
Modernize Office Automation	E-mail SR=Extension of FOCUS LR=ESS	<ul style="list-style-type: none"> <li>• No prior cost-benefit done for these activities</li> <li>• All prospective users don't have PC's or WS's yet</li> <li>• End-user environment pre-requires sound internal DBMS</li> </ul>	<ul style="list-style-type: none"> <li>• Uploading/downloading</li> <li>• Subset retrievals</li> <li>• Pattern of functionality</li> <li>-----</li> <li>• Information-Lens ?</li> <li>• Object-Lens</li> </ul>

**ENVISAGED SYSTEMS PRIORITIES**

**Bank 5**

<b>EXTERNAL PROBLEM</b>	<b>SOLUTION CONSIDERED</b>	<b>ITS SHORTCOMING</b>	<b>CISL RELATION</b>
Projecting ONE image to outside world	Make a strong 'home base' then become global player; centralize. Work in four stages. Technical connectivity	<ul style="list-style-type: none"> <li>• All locations not on network</li> <li>• Not even all having ATM's</li> </ul>	<ul style="list-style-type: none"> <li>• Study disparity</li> <li>• Understand capacity and degree of automated penetration</li> </ul>
Homogenization of merger	Evaluate systems portfolios	<ul style="list-style-type: none"> <li>• How to choose selection criteria</li> <li>• What are the good definitions and benchmarks to choose from</li> </ul>	<ul style="list-style-type: none"> <li>• Take up tool-kit now and learn parallel; no harm will be caused</li> </ul>
Evaluation of merger success	Measure market share Sense competitors' withdrawals Push to full-Europe Beyond 1992	Same as above	Same as above

**ENVISAGED SYSTEMS PRIORITIES**

**Bank 5**

<b>FUNCTIONAL PROBLEM</b>	<b>SOLUTION CONSIDERED</b>	<b>ITS SHORTCOMING</b>	<b>CISL RELATION</b>
Platform heterogeneity Olivetti vs. Phillips	Standardize where possible; If not, develop interface software Change in three phases (cosmetics conversion, future)	<ul style="list-style-type: none"> <li>• Will take very long</li> <li>• Requires specialized systems</li> <li>• Duplication of customers exists</li> <li>• Multiple currencies</li> </ul>	<ul style="list-style-type: none"> <li>• Test tool-kit</li> <li>• Perform detailed business analysis at functional levels</li> <li>• Produce specs of functionality</li> </ul>
Integration of Application Software	Not sure yet how to on large scale On small scale, how coalesce? Develop a/c DBMS not client	<ul style="list-style-type: none"> <li>• Creating backlog</li> <li>• Sizes of systems and nature of integration defies systems theory/practice</li> </ul>	<ul style="list-style-type: none"> <li>• Instance matching required</li> <li>• Inter-temporal considerations</li> <li>• Data redundancy issues</li> </ul>
Transactions on-line but updated in batches	Investigate real-time in long-run Evaluate cost of the subsequent delay (if possible) and \$benefits of overcoming it	<ul style="list-style-type: none"> <li>• Persistent lag in updation</li> <li>• Limitations of FOCUS</li> <li>• AMRO flat-files may not convert to FOCUS</li> <li>• Amalgamation of different statements is not current</li> </ul>	<ul style="list-style-type: none"> <li>• Test FOCUS interface</li> <li>• Study hybridization</li> <li>• Sub-system capabilities</li> </ul>



mostly reactively – to address some major problem or managerial support. Once this was addressed, provided that IT resource was still available, other problems would be solved through that technology. As and when new technology arrived, management bought it to solve their newer problems. With the advent of mini- and micro-computing, the technology was dispersed throughout the bank and each user gained more authority on what needed to be computerized and how it was to be used. This generated the “islands approach” whereby each division or department (sometimes even each manager) would get sanction for, develop, manage, and guard his/her own system. Such an arrangement worked perfectly. It delineated boundaries and put responsibilities squarely on individuals and specific groups.

With the growing pressures of unification (Chapter 1), the evolution of a new Financial Services Industry (Chapter 2), and the availability of improving technology(Chapter 6), the protection of an “individual-islands” environment is giving way to a more across-EC-region approach. It is providing for a way for a more “unified-approach” to things with collegiality and collectivism being the common denominators. Banks that are not working in this direction are feeling the crunch already. Banks that have begun in this direction face the challenge of :

- either putting another (standardized) technology in place
- or quickly tying-up the existing systems into a meaningful whole.

It is important to point out that without implementing new solutions across the old heterogeneous systems, it may not be possible to get various benefits of the available 1992 window of opportunity. Most of all, strategic

alliances of any kind may not be fully implementable. Unless connectivity is feasible, sharing of data may become a problem of significant magnitude. This will be the case regardless of the type of integration desired; *internal integration* for centralized control or executive support OR *external integration* for going into strategic alliances of sorts. A review first of the bank's own strategic positioning is necessary before considering the connectivity type.

## CHAPTER 6

### STATE-OF-ART TECHNOLOGIES FOR DATABASE INTEGRATION

In this chapter, we will briefly discuss the Composite Information Systems (CIS) concept as evolved at the M.I.T. Sloan School of Management by Professor Stuart Madnick (Gupta & Madnick, 1987). A mention of why the other new technologies reviewed for integration of databases are not the best choice in the case of EC integration at FSI level. We will first primarily focus in this chapter on CIS because of its philosophy and breadth <sup>1</sup>.

The CIS concept will then be used in trying to classify the Financial Service Industry problems in the five banks of EC discussed in Chapter 3. The objective is to be able to delineate the possibilities of solving – within next two years – some of the problems that arising in composition of information across the heterogeneous and disparate systems portfolios of the banks, through the possible use of CIS paradigm.

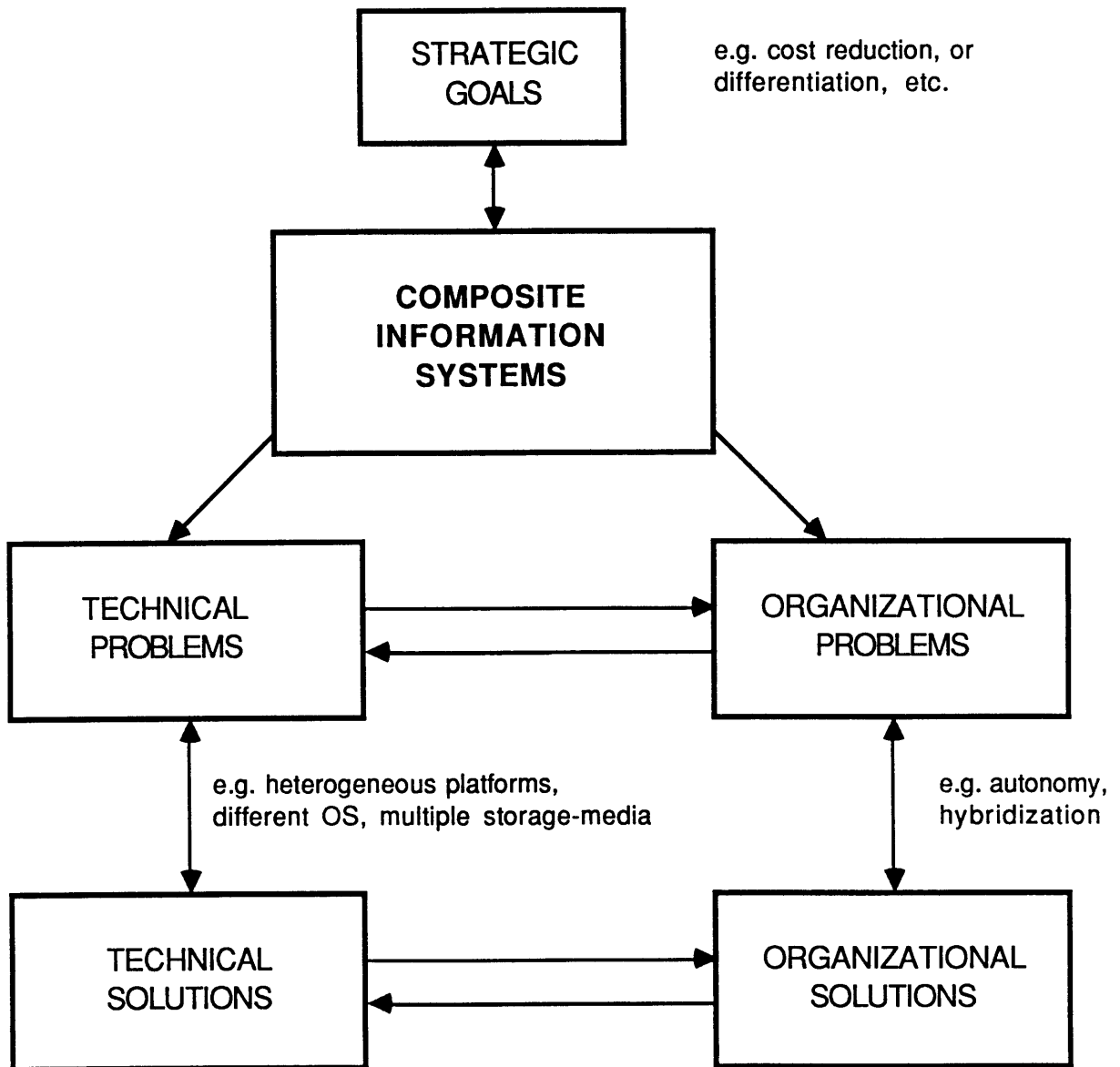
#### **6.1. The Composite Information Systems Paradigm.**

The Composite Information Systems (CIS) paradigm, as developed by Madnick, Gupta, et al, is best illustrated through a diagram as shown in Figure 6.1 on Page 6-2.

---

<sup>1</sup> See Gupta, Amar, Stuart Madnick, Christopher Poulsen, and Teresa Wingfield: *An Architectural Comparison of Contemporary Approaches and Products for Integrating Heterogeneous Information Systems*, M.I.T. Sloan School of Management, I.F.S.R.C. Discussion Paper.

Figure 6.1: The Composite Information System Model



### **6.1.1. Strategic Focus.**

The focus of this paradigm is towards the strategic goals of an organization. In other words, this paradigm places emphasis on the strategic vision of an organization and then works towards the requirements for information systems for supporting those strategic goals. Thus, a major strength of the methodology is that strategy should dictate the kind of information technology support required and not vice versa.

### **6.1.2. Defining Key Issues.**

Once the organization has set its strategic and long-term goals, it has to define its key issues – the issues that it wishes to address specifically in terms of information systems that will enable or disable the organization to achieve its goals.

These issues can then be classified into two types :

- Technical
- Organizational

### **6.1.3. Developing Solutions.**

Some issues cannot be clearly delineated into one class or the other exclusively and there may, in fact, be a mutual overlap. However, what is important here is to be able to clarify what is organizationally desirable and what is technically feasible. What is not technically feasible can be classified as

technical obstacles. Similarly, what is not organizationally implementable could be classified as organizational obstacles. Once these solutions and obstacles have been highlighted, major breakthrough has already taken place, because now we can set forth the challenges towards addressing these obstacles and linking them with the possible solutions. Technical obstacles would require technical solutions (and technology could be directed to do so). Likewise, organizational obstacles – even when needing minor alterations in the organizational structure.

#### **6.1.4. An On-going Effort.**

In general, CIS is a paradigm, not a ready-made solution available through the CIS Laboratory. It fosters the thinking of looking at the larger context of the organizational information systems, and in trying to put two or more pieces of data together to compose information that is required and intelligible at the higher levels. It also provides an interface between the organization and its customers. Therefore, it can be used for external information as well as for internal information.

#### **6.1.5. Unique Characteristics.**

The CIS paradigm is the strongest because it provides advantages in three specific ways :

##### **6.1.5.1. Integration:**

Integrating different information systems together whenever composition is required

##### **6.1.5.2. Independence:**

Provides choices of different degrees of centralization versus decentralization

#### **6.1.5.3. Evolution:**

Takes care of the organizational systems development without radical changes in the infrastructure

By providing these three functionalities in the CISL paradigm, one can achieve the state of affairs where, with incremental costs (of hardware, software, supportware, etc.), one can achieve major strategic gains in short periods of time. Also, a direction for long-term strategic development can evolve through the utilization of the CIS paradigm.

#### **6.1.6. Immediate Benefits.**

The functional utilization of the CIS paradigm is that it enables managers to rather rapidly :

- tailor information systems to the business
- obtain information more rapidly
- acquire information that is accurate and *free* from human error

Overall, the CIS paradigm enables us to take up problems and business as they arise. They not only accommodate the evolutionary growth of organizations and their meaningful integration of systems, but also provide the strategic advantage through adapting different solutions to technical and organizational connectivities. CIS helps in blending older technologies with the new and in providing transitions to higher levels of technological deployment.

Most of all, it works its way through from the strategic requirements to the corresponding systems requirement in an organization. Better understanding of the organization and its systems as well as *managing change* is what CIS effectively addresses. With the development of its Tool Kit underway, it will be able to effectively implement this philosophy on an ongoing basis.

## **6.2. Components of Composition of Information.**

A conceptual model architecture for CIS is shown in Figure 6.2, Page 6-7.

### **6.2.1. Five Major Components.**

There are five major components of this model :

- 1 External interface
- 2 Message control
- 3 Processing components
- 4 Data control
- 5 Shared data resource

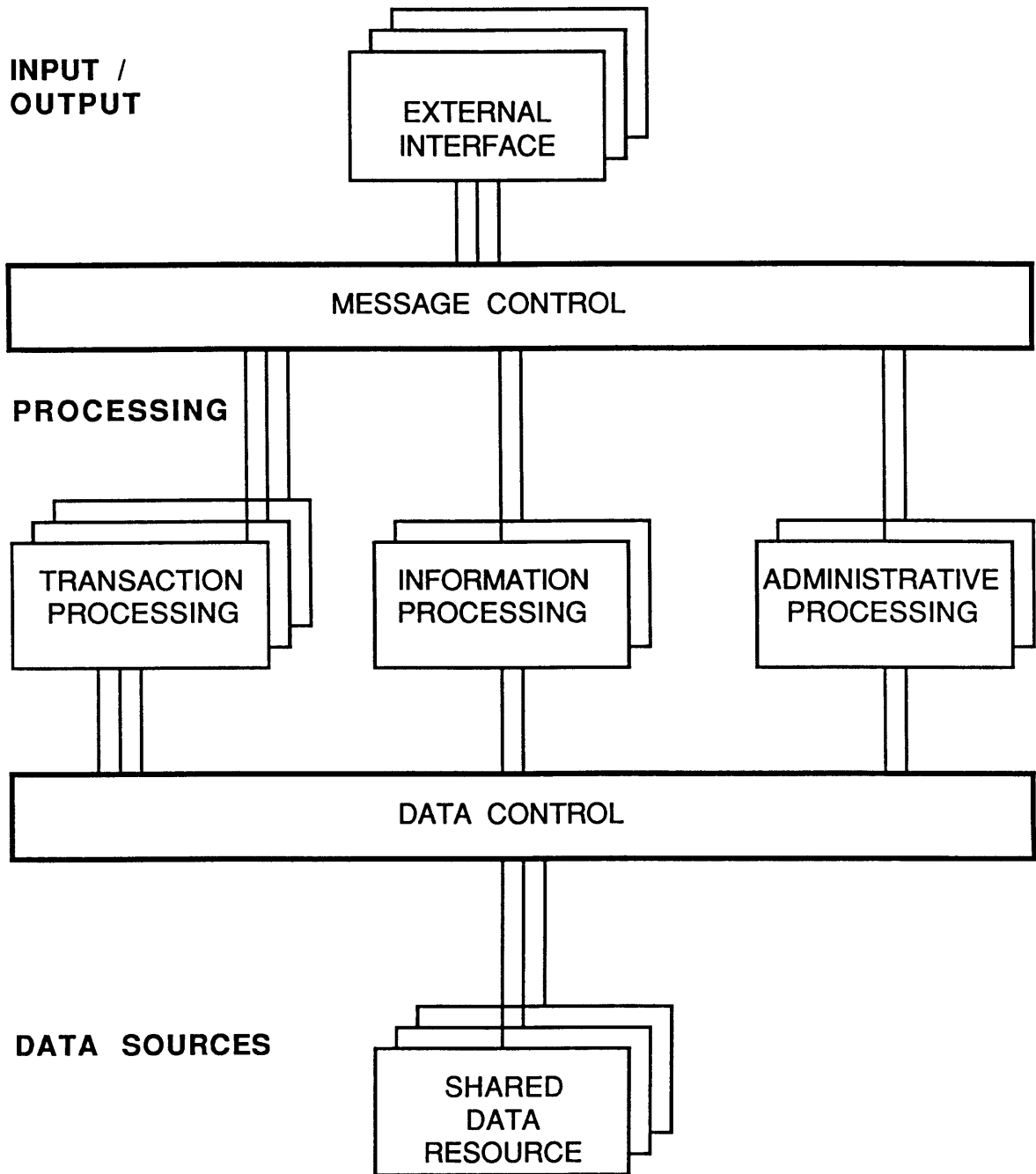
Each of these five layers can be further subdivided, depending upon the utilization of connectivity across systems.

### **6.2.2. Three Processing Sub-components**

The processing layer, in particular, can be subdivided into three :



Figure 6.2: CIS Architecture



- transaction processing
- information processing
- administrative processing

### **6.2.3. Response to Decentralization**

This model is very helpful to organizations that are decentralizing and providing autonomy at local levels, while also expanding both in each of the levels as well as across levels. Because the individual locales cannot possibly link to one central system, and by merely physical connectivity to the system, it is important to provide this decentralized approach and to be able to provide for data to reside on different hardware platforms in different locations that should be transparent to the user. By transparency we mean that the difference of hardware should not become obvious or should not be a hindrance to any user and that he/she could be able to use any terminal in the system. This *transparency without portability* of systems or changeover interruptions is one of the important features of CIS.

### **6.2.4. The External Interface**

The external interface provides a method of communication between the end-user (a typical manager in a locality) to the rest of the system inwards. So, there are a set of external communication and linking facilities in this interface.

### **6.2.5. Message Control**

This is a major provision for taking in the messages from external interfaces and sending them to the processing components of CIS. It therefore handles things like routing, translation, sequencing, monitoring, etc.

#### **6.2.6. Transaction Processing**

This is one of three major application components in CIS. It provides for the traditional transaction processing (TP) to take place routinely through the CIS as if it were taking place in a normal TP world without changes to the environment. Transaction processing allows for the addition/deletion/updation of transactions residing in or added to the system through various TP points.

Routines like data validation, risk management, accounting, and other transaction functions also reside in this subsystem of CIS. All in all, this subsystem provides for transaction updation for any TP based environment.

#### **6.2.7. Information Processing**

This subsystem is typically a kind of Executive Support or Decision Support provision. It allows managerial analyses like performance analysis, calculations, data engineering, spread-sheet analysis, projections, consolidations, etc.

#### **6.2.8. Administrative Processing**

This component of CIS has functions that provide general automation support to managerial and administrative personnel. It includes word

processing, electronic mail, document storage and retrieval, control functions such as activity reporting, and graphics, etc.

### **6.2.9. Data Control**

Data control is an overall linkage between the processing functions and the actual data storage resources. Therefore, all control functions relating to data are handled by data control.

Typically, five primary characteristics have been identified in data control :

- Security
- Data presentation methods (common data definition language)
- Routing capabilities
- Sequencing of multiple requests and their prioritization
- Concurrency control to maintain integrity of the shared data resources

### **6.2.10. Shared Data Resources**

These resources are the actual hardware components that have data in different formats produced at different points in time residing on it. In fact it is the ultimate objective of CIS to enable time sharing of data to take place and to access for utilization by the organization. In terms of the banks we have researched into, we know that there are several types of storage media on which data is currently residing and where these banks need to retrieve them from time to time. The problem of different types of logical formats, different types of

physical storage media, and different hardware dependencies already exist and have been identified in this thesis in Chapter 3.

The ideal would be to have one data resource for hardware as well as software for simplicity, speed, and ease of cleansing. But this ideal cannot be achieved – at least in the next two years or so for the organizations that were researched into. A provision to share the data across all applications and sources, regardless of the physical location and storage method for each data element, can be provided through shared data resource in the CIS model.

### **6.3. Other Products.**

Some of the products that have similar objectives as CIS include:

- DI-engine
- DIS
- Mermaid
- Multibase
- Ingres
- Supra

The problems that these (and other) systems present are that they either require the replacement of systems, or residence of these products in each system component, or superpositioning of their product over the existing configuration, or introducing very bulky program-codes.

Some of these systems do not make global updates, for example. Or they require that existing systems be modified. Or they need hardware changes. In general, one of the major strengths of CIS is that it is both *data unintrusive* as well as *system unintrusive* meaning that it does not require the data nor the existing system to be altered in order to introduce CIS.

There are other issues which have not been fully investigated into. For example, issues of system security, development strategy, etc. that are sensitive and need addressing. CIS has already made headway in these and other directions that are important from management perspective.

#### **6.4. CIS Fit in EC Financial Services Industry.**

We have already outlined in Chapter 5 what the most important information composition problems were in the five banks that we studied. It was clear in that chapter that the pressing problems related invariably to issues of connectivity – and that the lack of higher-level connectivities were slowing down the plans of these banks for 1992.

As a more detailed reading of the Appendix (and summarized tables in Chapter 5) would show, the best fit in the several types of systems that we examined for each bank would be CIS. While some other systems do exist, we are not sure if shortcomings in Section 6.3 can be overlooked. Any improvements in large-scale heterogeneous systems for decentralized organizations must be *integrated* with the existing system and without requiring modifications or extensive interfacing.

EC has excellent technology for telecommunications. In France alone, there are 12 different types of switching circuits -- each circuit costs millions to research and develop.<sup>1</sup> However, there will be a problem in standardizing one, if France, Britain and Germany together see the several different switching networks and standards they have. This in itself is a problem in standardizing and/or harmonizing one telecommunication network to serve as a backbone as well as another one for a backup for the emerging financial services industry. Given that such a standard would evolve, the next problem would be of communication outage; line outage, different languages, three time zones, and several telephone companies on which modems will be operating.

Granted that even this would be taken care of, the next issues that will arise will be on how logical connectivity of databases will take place on such a standardized physical infrastructure across the community. Beyond that, the need for an organizational connectivity for a company throughout Europe that wishes to trade securities as well as deal with its consumer banking and other account through FSI will become imperative.

Overall, the industry itself would need strategic connectivity at some point in time. A prudent approach for the commission of economic communities would be to begin from the strategic connectivity vantage point of view NOW and work downwards to physical connectivity via organizational and logical connectivity. This is why the author has repeatedly and emphatically suggested that a joint developmental and implementation effort between the commission,

---

<sup>1</sup> Author's internship in Summer 1990 at Paris Telecom, and papers written by Monsieur Laurent Benzoni at Ecole Telecom.

the governments, and the industry members, needs to take place and that their education and training as well as their awareness of problems regarding problems and issues related to connectivity at all levels has to be brought about.

If several companies and standards will co-operate simultaneously, it will become very difficult to make contingency plans and also for management to become fully capable of handling the diversity. Regulatory rules often influence and even dictate technologies that must be used. These rules in many cases have had positive impact on technology in the past.

But mostly, regulatory, legislative, and political processes inhibit automation, including disputes over regulatory jurisdiction and foreign legislation prohibiting dissemination of some data. Resistance to change, respect for tradition, and social customs -- which may reflect deeply rooted institutional relationships, strong economic interests, or cherished values -- also significantly impede automation across a heterogeneous community.

The question of standards is a very detailed one. Lack of regional standards can cause problems. Let us define standards first. Standards are general models, specifications or criteria for technology, designed to allow technological applications coming from different producers to be interoperable. Interoperability allows users to mix and match components of, for example, communication systems, and also makes it easier for them to migrate to a new system, phasing out older equipment gradually.

Standards may be set by custom or general consent, by market forces, or more formally, by authority. In the case of the U.S., standards (whenever they



exist) are set by the industry, often through professional associations. So, standard setting in the U.S. is becoming more politicized, especially in communication standards, since the Bell System no longer sets standards de facto.<sup>2</sup>

Two levels of standards are important; those that affect communication of data in general, and those that particularly affect the financial services industry. The need for regional standards range from technical standards and common languages, to highly individualized organizational routines.

Technology standards are critical *in terms of the weakest link*, that is, if the technical performance or capacity of a market participant is below those of the market, then the benefit of the market's technology is compromised. There is no minimum standard required today for the technology, either internationally or domestically, in order to offer clients the best access to banking information and services.

In our opinion, it is important that the CEC establishes standards for all levels of connectivity as a unifying medium and thereafter letting the subsidiary principle apply and the individual local companies making whatever little changes they feel they need to make to the standard, as long as they realize that the standards are and where regulation is being violated.

Neither technical standardization nor harmonization of regulations can come easily, cheaply, or swiftly. Some markets will have to make costly changes,

---

<sup>2</sup> U.S. Congress, Office of Technology Assessment Report. "Critical Connections: Communication for the Future," Washington, D.C., U.S. Government Printing Office, January 1990.

while others will need only modest ones. Even modest changes can prove very difficult and time consuming to implement because of the complexity of effecting change in established procedures, and because any change can challenge vested interests.

Some changes may be implemented by the private sector alone, but others will require government assistance, CEC monitoring, intergovernmental and interorganizational education and training, etc., as well as forms of changes in regulation/legislation. The private sector has little experience in long-lasting international negotiations. Therefore, the least required of the CEC would be to provide leadership for and facilitate intergovernmental and interorganizational participation and development of standards and of harmonization -- because governments are deeply involved in the standard making process in Europe in general.

As mentioned in Chapter 2 on the unification of the European communities, one of the problems anyway of the EC is to harmonize the several technical standards of the manufacturing industry and of production of goods. This will equally apply to the services industry, typically the financial services industry, which needs real-time, on-line data, and well established and backed up data centers. We believe that the CISL concept can be used in the evolution of such a standard and in the training and development of executives from the government and industry in coordinating such a standard.

## CHAPTER 7

### CONCLUSIONS AND RECOMMENDATIONS

This last chapter summarizes important conclusions and recommendations that we have derived based on the result of work undertaken for this thesis. Though there are many specifics that we can hone on, very broadly, there were three major findings that resulted from our work. We restate these conclusions here and also make very brief recommendations in each of these conditions.

#### **7.1. Missing Link Between CEC Directives and FSI Implementation.**

First, CEC Directives – even in the best spirits – are *not really being interpreted in a consistent way* by the rapidly evolving Financial Services Industry (FSI) in the European Communities (EC). In fact, members of the FSI are interpreting various directives in ways that they conceive *must be (or have been)* the rationale behind the twenty-plus directives related to financial services and as to what will be the *best short-cut* in addressing these directives.

In the long run, this may not cause harmonization to occur by 1992 or very near thereafter. Certainly not the way CEC has envisioned harmonization, or in any other way that will cause the communities to coalesce. The neutrality of the CEC directives is a good thing – they serve an important purpose of making them acceptable to all heterogeneous parties involved – but they need to be

much more specific for jointly translating them into operational plans *when* it comes to shaping the new financial service industry in the EC.

A great deal of thought and amicable 'bridgework' needs to be done across the EC. In particular, the FSI-related directives have to be shaped into tangible/workable form so that the unclear middle-ground between the highest policy-level at CEC and the actual bank-level is less nebulous. As we can safely conclude from our discussions in Chapters 2 and 3, what is missing is this link-pin function that can only be effectively performed through an industrial policy for FSI.

Additionally, guidelines are needed to develop acceptable FSI standards on the basis of subsidiarity because this principle seems to be the 'optimal' solution for unification and hybridization of technology will be more easily translated based on this principle than through any other in the short time-frame available to the CEC.

In this regard, there are *four major players* that need to be participate in the designing of a co-joint strategy for the operations of all FSI activity in the near future. They include :

- The Commission of the European Communities  
(all Directorates, in particular, DG13, or an additional DG for data-sharing and management)
- members of the twelve governments' central coordinating authorities for financial industries

(like central banks, finance ministries, etc.)

- representatives of the financial services industry, and
- other controlling bodies or interest groups of the EC (e.g., Auditors, Reviewers, Interest Groups, etc.).

We recommend the possibility of either extending the scope of DG13 (Telecommunications, Data, etc.), or creating a separate Directorate General in the Commission of European Communities for managing the sharing of databases across the heterogeneous EC region.

Such a Directorate could play an important role by providing three central and critical functions:

- Providing FSI in EC with a clear and well-coordinated data-sharing possibilities (and interpreting the CEC directives and other regional regulations more elaborately with the FSI for operational purposes),
- Providing a leadership to the EC regional FSI with a niche and focused role in the *global* financial market), and
- Linking the FSI with other (services) industries in the EC in future.

Database sharing will not only be important in the financial services industry because of the immediate responses they have to provide to the customers, but also to the other service industries where on-line data can be

shared across boundaries in a uniform manner. The example of the airlines and distribution industries should serve to illustrate this point.

## **7.2. Perceived Strategies versus Transitory Strategies.**

Second, the strategies evolved by the members of the FSI to address the 1992 challenge, fall under *what they perceive as* two broad approaches.

On the one hand, there are the purely national approaches in which banks wanted to consolidate their national status and continue their allegiances with their governments, thereby protecting themselves in their own home turfs. They would like to expand very carefully and discretely where they could be assured of markets before entering the region.

On the other hand, there were the banks which wanted to go all out into regionalizing and taking a plunge now, whatever its costs. These banks were typically those that had a broad product/service range to offer and therefore, felt that at least some of these would appeal at some locations and that going earlier is wiser as it helps establish strong foot-holds before others come in.

In neither case did we find that EC-regionalizing had been achieved or could be achieved by 1992. Invariably, all banks that we visited were complaining of costs involved in expanding the technology base or of lack of synergies across their technology platforms in the region.

As we can safely conclude from Chapter 4, there are three other transitory approaches that are either being followed or that we think are implied in the plans and actions of these banks. These strategies include fragmentation, stratification, and cross-integration. Together, these five strategies constitute a spectrum of activities that are dynamic and that the banks can go through in various stages towards 1992. These stages and approaches have their associated information composition problems – each problem type with a different solution. More on this in Section 7.4 below.

Our feeling in this regard is that the financial services industry members are not themselves very fully clear *yet* about the exact role they will play in 1992 and few years immediately thereafter – as near as we already are to 1992. In general, the tendency is to acquire smaller banks or be acquired by larger banks. We are genuinely convinced that regionalizing by itself is a good economic objective, but that it will not be a one-step function. So, such mergers and acquisitions (typically manifestations of a step-process) may not necessarily work.

This is besides the fact that, even over periods of time, unless synergy of technology platforms and accounting systems have been carefully examined *beforehand*, mergers and acquisitions (M&A) do not solve the problem of costs of technology – in fact, M&A create new varieties of problems that consume lots of energies of the management and subtly eat into the post-merger/post-acquisition resources and kill most attractions and initiatives that led to the strategic alliance in the first place.

Over the next several years, the regionalizing objective will be achieved gradually by those banks and financial services industry members who are well

preparing themselves with a specific focus on information composition. In this regard, we have recommended in this thesis the need to align shifts in policies of the banks and reduce the costs and overheads involved in such shifts.

A smoother approach would be to have the short-term and the long-term plans based on the capabilities of management and the availabilities of technology platforms in the circumstances. A co-joint forum with CEC and others mentioned in Section 7.1 can greatly facilitate workable strategies towards 1992 and the next century by catalyzing industrial standards and practices that will provide the European Communities with specific leadership advantages.

### **7.3. Incompatibility of Heterogeneous Technology Platforms.**

We have clearly shown through Chapters 4 and 5 that the information technology platforms are not sufficient for the kind of challenges the banks were setting themselves out for. At the same time, the kind of issues raised through the issuance of the directives related to FSI need to be addressed through I/T's, and, these are not sufficiently inter-connected at all levels to handle the heterogeneous nature of platforms, cultures, and industry practices.

Typically, we have explained the connectivities in Chapter 6 and have specified in Chapter 5 their missing levels. Our finding was that connectivity was merely understood at its technical (hand-shake) level, and that the FSI was beginning to feel the need for logical connectivity because data flow would need to be reconciled in the back offices. Authentic information was sought amidst confusion!



We have also concluded that there will in due course be a genuine need for organizational connectivity for all those banks that are going for Regionalization or Globalization by 1992. With regard to the technology platform, we have also shown that the CEC would need to sponsor and encourage strategic connectivity in order to catalyze the evolution of FSI and its technology alignment, as well as to play an active role co-jointly with the players in the industry to provide Europe the economic lead that is the objective of 1992.

In general, most banks are beginning to feel the pressing need for completing the connectivity spectrum through building organizational and strategic connectivities.

#### **7.4. Recommendations for Addressing these Problems.**

The CISL/TK model that we mentioned in Chapter 1 and highlighted in Chapter 6, is an excellent tool for addressing the above three problem-types. On its basis, further study could be done into the connectivity requirements for technology platforms in Europe 1992 and beyond. This CIS/TK paradigm not only classifies connectivities and studies them individually, but also provides for its total organizational implementation which is critical to the fast fusion of I/T.

##### **7.4.1. Policy-level Requirements.**

At the policy level, we believe two kinds of policies are required. An industrial policy on how the financial services industry needs to support the European communities economic infrastructure, needs to be spelled out *with*

the members of FSI. A standards policy on what technology standards are absolutely essential and where harmonization through subsidiarity (regionalization-cum-localization) is permissible.

This kind of framework will facilitate a better transition for a common Europe. It will also provide organizations with the capability of analyzing what kind of partners they can make and what kind of partners or joint ventures they should not involved with, even when they can afford it – because their technology synergies may not be rewarding.

#### **7.4.2. Perceived versus Actual Strategies.**

We have found two apparent strategies and three implied strategies. Then we found the need for various kinds of connectivity that are not being met at present and in fact form bottlenecks to the development of this young industry. We believe that the utilization of such a paradigm as CISL/TK, will enable the members of the FSI in Europe to participate in research and get on board the latest in research at MIT. It will also address the organizational and technical issues effectively and enable the twelve heterogeneous communities to be linked in reality.

#### **7.4.3. Impediments to Strategic Alliances.**

The wave of mergers and acquisitions (M&A) that the European financial industry has seen has been prompted by the economic motive, but has not necessarily come to fruition because of the technological handicaps and

dissimilarities that are now causing more problems to the merging organizations than they expected to meet.

Typically, one of the most aggressive banks that had merged with another equal sized bank and a somewhat similar technology platform, found that there were serious impediments in its growth now and that these impediments were primarily in the back offices. All trades and standards of auditing will rest on which type of technology and platform eventually comes up. And if there is a mixture of the two, it will take a longer time as well as cost more in understanding and evaluating.

#### **7.4.4. Lack of Synergies due to Technological Heterogeneities.**

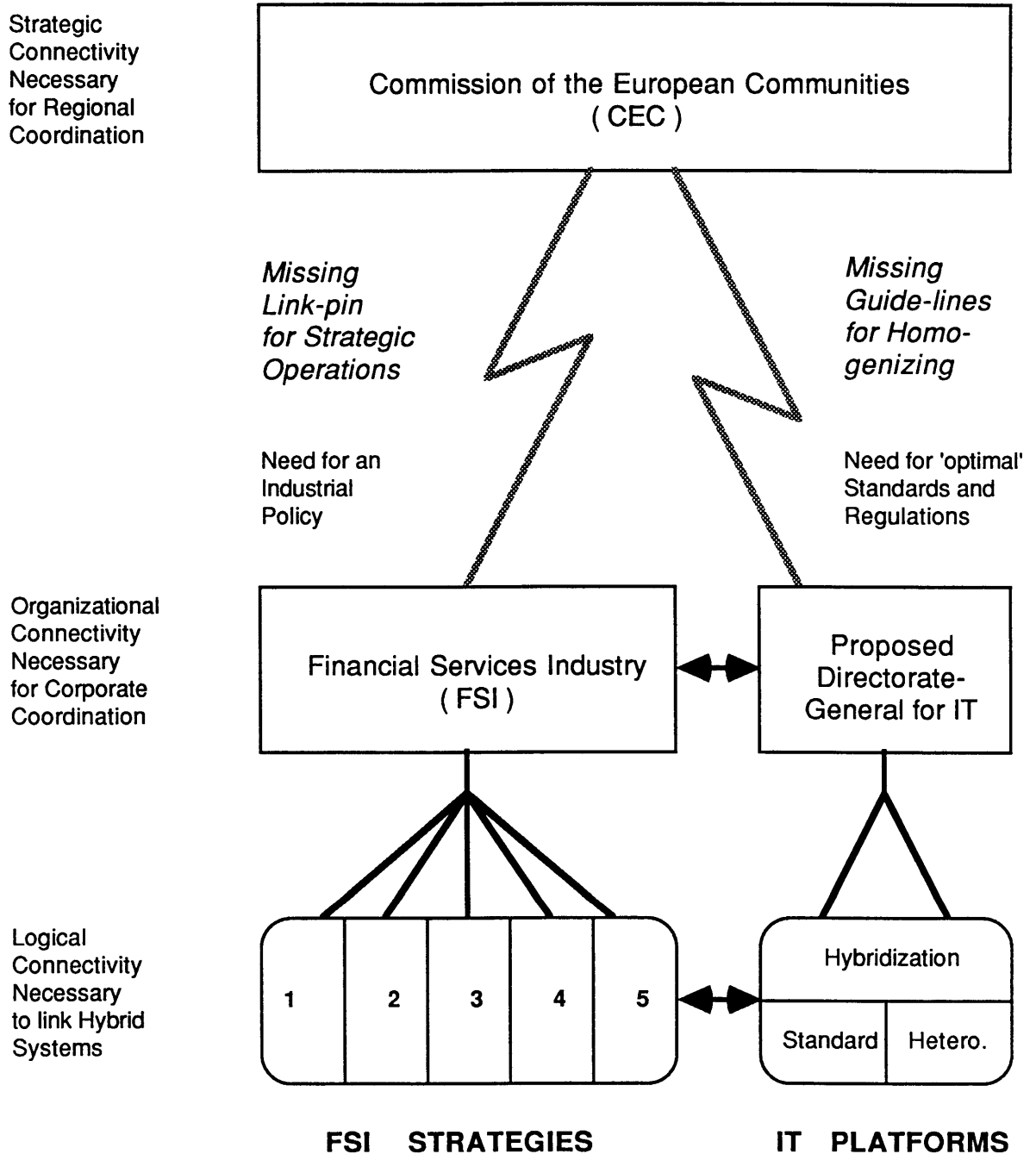
Much of the vigor for economic motives is lost by such lack of synergies among technologies. Our strong recommendation is therefore, again, to have co-joint strategy making and operational planning among the four members involved in the scenario, and if possible, CEC to create a separate Directorate General for data sharing in an information-based society of tomorrow.

#### **7.5. Finally . . .**

Figure 1.1 of Chapter 1 (reproduced on the following page for quick reference) shows the various linkages at the macro level that depict the need for the two policies mentioned above and the three major areas that we have focused on this thesis. We believe that each of the actors involved will be affected by the lack of connectivity in Europe of 1992. Solving the problems will

**Figure 1.1: Technologies and Policies –**

Identification of Areas Needing Careful and Joint Attention Across EC



Organizations need to figure out exactly which strategy to pursue to capture the 1992 Window-of-Opportunity.

For strategic alliances, it is important to know which partners to choose based on their IT connectivity.

bring relief to all three – in different proportions – because of the roles they play in the community. The primary points of intervention in this system where we think key activities are needed are really two.

First, is the CEC, where at the top level the need for database sharing has to be encouraged and promoted through a Directorate General. Second, the technology platforms have to be developed by the organizations who will be involved in transactions across the borders and consolidating data on a regional basis for customers of sorts in the Communities. Again, the mechanism we recommend is that of CIS/TK or other similar arrangement, where not only the connectivities are understood in depth, but also executive education, implementation and evaluation is done through a co-joint body.

The author very strongly recommends the four actors to focus their individual and collective efforts in arriving at these two policies (industrial FSI policy, and standards that will make the transformation to 1992 smoother). In addition, these collective efforts need to address the issue of arriving at *optimal* standards and bridges for the I/T platforms so that *hybridization* through unification results with the efforts of a separate/dedicated Directorate in CEC.

There is a genuine need now to actively employ a sound and rigorous paradigm that will serve three purposes :

- (a) providing a realistic framework for analysis and evaluation,
- (b) focusing on areas that need policy and operating attention,
- (c) enabling a continuing deployment of technology in line with the  
(autonomous) policy(ies) arrived at in (a) and (b).

The ideal objective is to have a smooth transition into 1992 and to have Europe unified on a technological platform, corresponding standards, and bridges among heterogeneities that meet the strategic needs of the regional strategy. This will take time. It may be achievable by the Year 2000 if appropriate measures are taken by the CEC in designing policies, regulations, and making standards that will enable technologies to be shared and information to be shared and consolidated on a regional basis.

## Appendix A

### FIVE REPRESENTATIVE CASE STUDIES

#### A.0. Introduction.

During 1990, several European banks were contacted who had their home bases in the European Communities. Of these, we focused on seven. Two of these seven had merged with two of the other five. Our case studies of these five large banks are presented in this appendix.

Each bank in the appended study is highly reputed, is a player of significance, and has very receptive management. Three of these banks (Banks 1, 2, and 5) are universal and provide a range of products and services to their clientele. The other two (Banks 3 and 4) are primarily investment banks – in fact, competitors of each other.

The methodology used in studying these banks was through visits to the Senior Executive Offices and Information Technology–related functions. Wherever necessary, interviews of other personnel were also undertaken. Public materials such as annual reports, press releases, and technology investment details were also obtained to get an overall picture of the bank's position in the Financial Services Industry within EC as well as in its endeavors in utilizing technology for future strategies.

In accordance with academic ethics and to protect the confidentiality of the banks and their trust in us – not to mention their hospitable attitude and invaluable time and support – we have not used the real names of these banks. Instead, we mask them as Bank 1, Bank 2, Bank 3, Bank 4, and Bank 5. In no way is our analysis affected through this masking.

Also, our critique in the various chapters on individual I/T strategies and the lack of various policies or levels of connectivities <sup>1</sup> in these banks does not warrant the disclosure of actual names. The idea is to present the *different* responses by members of the FSI to the EC92 challenge and to see how *I/T strategies* are either supporting or may be failing to provide adequate systems support to their respective banks.

English translations of executive designations and masking matches of other Management Information System terms are used as far as possible. Names of countries where headquarters are located are given as “*home country*.” Similarly, the city of central office is indicated as “*home city*.”

Reporting style chosen is a narrative. This style should bring out more intuitive material. A comparative tabular approach would not provide many insights given the :

- (a) the different natures of the banks,
- (b) the different geographic locations of home bases,
- (c) different degrees of computerization involved in each, and

---

<sup>1</sup> Connectivities are discussed in Chapter 6.



(d) different products and services offered.

Besides, much *generic* information would be lost in stripping down the narrations to an imposed fact-form structure.

Within the text, authorial comments are placed within shadow boxes. These pertain to the immediately preceding point presented by the bank executive interviewed. In most cases, the executives later confirmed these comments as important for consideration in the event of regionalization (or globalization), though the validity and degree of agreement varied. The interview narrative continues after each comment box. The word “we” indicates the author, not the interviewee(s). The latter are indicated as “executive(s).” Authorial comments are an important part of this thesis. They mostly are I/T problems/solutions, typically those related to information composition across heterogeneous data sources.

At places where the interviewee admits an information composition disability, the executive’s statement is written out in bold-face, and centered. Hence, a quick review of this appendix will visibly bring out the important problems in the EC banks that we researched in relation to our paradigm of Composite Information Systems (Chapter 6).

The author takes responsibility for any mistakes or errors that may have occurred. Neither M.I.T., The Sloan School of Management, nor the Composite Information Systems Laboratory is responsible for unintended errors.

## A.1. BANK 1

Interview with Director-General of Central Information Systems.

*Also present:*

Senior Vice President for Central Division of Operations and Data Processing.

### A.1.1. Background.

Within Europe, Bank 1 has essentially divided customers into two classes :

- individuals
- companies

Globalization is *not* the same for companies and individuals. Bank 1 sees these segments being differently placed. Therefore, globalization is a different objective for each of these two market segments.

### A.1.2. Individuals.

Individuals have accounts in separate branches. So, depending upon which branch they have their account in, their accounting is done at branch level. There are not many customers who have multiple accounts, (i.e., in various countries and in various branches) all over home country or all over Europe. Very few are like those. Those that are, fall in a minority. Such multiple account holders, are already known to those branch managers or to the regional managers, but by and large, for the majority of accounts in individual cases, there is one and only one account.

**Author's Comment 1:**

This assumption needs to be challenged because Bank 1 has made this statement on the basis that a person/customer is using only *one* name, and *exactly* in the same form, and *only for himself* to open an account. It also assumes that the customer does not have joint accounts, and that he cannot use his last and first name interchangeably. This assumption also needs to be challenged in the purview of local law in different EC regions.

**Author's Comment 2:**

This assumption will be even more challenged when the bank operates in all 12 EC countries with customers travelling more and more and using bank accounts in more than one name (e.g., with business partners, family, siblings).

There are customers who have different types of accounts though. Individuals can be holding current accounts, credit accounts, as well as trade with or through Bank 1 in the Treasury for shares, bonds, stock, etc. And these are, for the time being, difficult to synthesize.

**It is not possible to have the portfolio of one individual who has several types of accounts in a branch.**

If a customer tries to deal at a higher organizational level for different products in other branches through his/her existing branch, much of the work has to be done manually and tailored for that customer's needs at that time. This may involve substantial amount of time and extra effort.

**Author's Comment 3:**

Even within one bank, one country, one city, one customer there is a need for branch-level autonomy while the bank may need overall organization-level standardization.

An interesting observation for individuals' cases is that individuals will travel in a small radius for most of the time. So, the need to have more than one account would not arise, and if it would, then that small region in which such individuals will be moving most often will take care of the consolidation of their accounts at regional level.

**Author's Comment 4:**

This assumes an 80/20 rule; that 80% of the people will only travel 20% of time within 20% of their radius, only 20% people will travel 80% (and could be classed separately as *special customers?* ). But Bank 1 has no plan to consolidate these fewer accounts at regional level because of technical problems of heterogeneous data sources, both manual and on computers.

### A.1.3. Companies.

For company accounts, the question is more complicated. Trade in Europe is growing very fast now since the promulgation of The Single Act. Bank 1 has many relationships with companies. Big companies have several accounts in many cities, and in different currencies, and across different products (with diversified risks), and it is becoming very difficult to catch up to the speed and complexity of the growing market.

**There is a problem of communication for evaluation of clients by the Bank when trying to sum up all the accounts of these very large organizations.**

Small- and middle-sized companies, however, do not pose that much problem. There is a growing concern that in trade environments, customers of all types; small, medium, large, will cause potential problems by requiring extensive reporting frequently.

#### Author's Comment 5:

For large groups mentioned (like Shell, Renault, Phillips), their components have different names or are *different entities* as far as business dealings are concerned. These have their own independent accounts. Therefore, their integration, (e.g., throughout as Shell) faces the same **semantic matching** problem that many large U.S. banks have. Should there be a prefix or a suffix after every name?

#### **A.1.4. Standardize Systems for Supporting Strategy.**

About seven years ago, when EC regionalizing was not much discussed but Bank 1 wanted to go global, the Systems Department of Bank 1 defined what they call a “Common Language,” – a universal language. By language is meant a *total method*. It does not imply Programming declarations or Procedures or Macros or portions of Procedural Language.

**Common language is a combination of standards set for the working environment, the operating environment, and the managing environment.**

They set out to establish in all Bank 1 branches, the same language and identification methods so that they did not have to translate language of individual country affiliates but that all had the same approach towards, data gathering and data processing. Even if they do not have a common system or a real-time system, they had the *same approach* through the universal use of the Common language.

#### **A.1.5. Extents of Standardization.**

The access authorization to systems, for example, was one method or procedure that was universally standardized. The file structure (meaning, the Data Language and Data formats) was standardized. The number and types of files were standardized. And and so on. Even housekeeping was standardized. This system is now running. It has partially solved Bank’s problems, that started 20 years ago when the bank started facing exponential growth.

Today it has over few thousand branches in home country, around a thousand in the rest of Europe, and they operate in more than 50 countries in addition to that. This Common Language only partly helped meet the growing demand.

**Author's Comment 6:**

It would be interesting as well as important for Bank 1 to carry-out an extensive survey over all these countries to see how completely (and effectively) is the Common Language used and where there may be impediments to logical and organizational connectivities. A study could be done to evaluate the connectivity limits of Common Language.

**A.1.6. Preparation for 1992.**

Bank 1 has a definite strategy for 1992. It has already started working on it. Bank 1 aims at becoming the **largest universal bank in Europe** and will be one of the leading players in the world.

In order to so become, Bank 1 started acquiring other banks in Europe. It claims that it is now the largest bank in terms of number of branches outside its home country (within European Communities).

As mentioned (Page A-1-13) in an interview at the Directorate General for International Affairs, acquisitions of banks have been made extensively in EC region. All this has been done with 1992 in mind, so as to be able to

**serve all kinds of clients in the 12 different countries**

of the region.

**Author's Comment 7:**

Given the vast differences in the culture still remaining (note our remarks in Chapter 1 that higher-order unifications will take considerable time), uniform service (i.e., standardized products or same procedures) could not become the 1992 practice or reality in a universal banking environment.

**A.1.7. Geographic Availability - the Solution.**

More and more branches are needed by this bank. It sees geographic expansion and physical availability of prime importance. Bank 1 has set out to fulfill a mission to expand and be available in every nook and corner of Europe for individuals and companies that requiring *any* financial service.

The executives believe that having a customer driven approach in their operations is very important. So, their bank is organizing their information



system to find out where most of its customers are, throughout the world, on a product classification basis, (e.g., on basis of shares, bonds, mutual funds, pension funds, etc.). This portfolio now needs information systems to connect and communicate data on a global scale.

Additionally, as the business is growing, the problems of volume and complexity are growing. These are beginning to cause a lot of pressure on the Systems Department to meet the various needs on a timely basis.

Bank 1 is currently trying to understand how to link growing data sources so that the investment made in both hardware and software and the training of individuals does not go waste. It will keep open to testing new technology, whereby the composition from such data sources will become possible.

Because of 1992, there is going to be -- in fact, there already has started -- an accelerating increase in customer base in product types and in regional expansion. Today, consolidation is not the most important job because it is done biannually, and queries of sorts by top executives and senior executives does not take place very frequently. So, consolidation is not seen as a major challenge at present. However, it is envisaged as a major problem in the future.

**There is another conceptual problem being faced now; that is how to define a customer ?**

What is meant by a customer at the management level? From banking viewpoint, they have to treat all customers similarly. But their activities are a dynamic phenomena and institutional controls will cause delays, so the bank's

influence will be on controlling the data standards related to all client companies.

The risks of various companies and investments in various portfolios is different, and it is going to become a problem of consolidation when this risk assessment of all types of clients, particularly the small and medium ones, would need to be done through the computer on real-time basis.

#### **A.1.8. Long-term I.T. Plans.**

The bank's future plans, as far as information technology is concerned, are to introduce the Bank's Common language of methods, procedures, data structures, even programs and macros, etc., to all taken-over branches. In other words,

**The bank is trying to further the approach of standardization.**

This is not completely finished yet, because all translation will take time, roughly one year, from translating those branches into the standard methodology. So far **all consolidations, risk management and syntheses, are done manually** at the head office in home city, upon receiving figures from the branches, either through telephone or by mail.

The bank sees consolidation through standardization by 1992 as a potential promise for success because they have not encountered serious problems, and *also* because they do not foresee any alternative approach yet.

**Author's Comment 8:**

Standardization as such, will take longer time than thought – much beyond 1992. If fully accomplished, it will need to keep the branches and sub-regions *tightly coupled* and not autonomous. This will result in more monitoring costs than the expected gains. Besides, the standards may change.

Upon discussions with them about CIS concepts, they think that it is a new paradigm. But they were skeptical about how effective such a system would be in reality. In other words, though they were receptive to the ideas and theory of CIS paradigm (Chapter \*\*\*\*\*), they would like to see results actually happening before believing that heterogeneous, disparate, and disjointed systems can be made to compose information for executive and managerial use.

**A.1.9. Evaluation of Risk.**

Another current priority and agenda for 1992 – other than expansion and standardization of systems – is that of risk evaluation to follow loans and to computerize systems on financial data-bases of risky instruments. They have different departments that supply information through users throughout the organization. This will be a priority in the next two years and seems difficult to handle.

Bank 1 commented on their most important problems in the Information Technology area. They mentioned a few areas. The first problem is **how to go real-time**. They are already online, but their online systems are not real-time systems as such. They believe that speed and accuracy *both* are equally important in the growing market of 1992, and therefore the common denominator for all success will be based on online, real-time databases.

In fact, extending the facility of using computer terminals to customers, on real-time basis, is being considered an important issue. This can be complicated because

**definition of procedures and methods in each country differs**

and the difference between these procedures is already causing the problem of meeting the imposed standardized solutions from the top. Bank 1 realizes that :

- the throughput in the branches could become faster
- branches will need to live upto the standardization imposed upon them from the headquarters
- the local norms and procedures of the branches will conflict with much of the standardization work and this implies added cost.

Secondly, the bank is setting up a new communication system all over the world.

**Procedures and methods for setting up the world-wide physical communications system are quite complicated.**

This will be a problem and a challenge to establish the communication system effectively and not just to hard wire things around, but to be able to have other connectivities established. So, they are already thinking in terms of *other* connectivity types and organizational dynamics resulting from that hard-wiring.

The third problem is in trying to globalize the customer product needs, and this they believe exists for both domestic and international customers because customers are listed for loans, shares, housing payments – product-wise. They have to set up a complete knowledge of each customer on a real time basis. So in order to get new clients as well as keep old clients, they will have to provide services through a very efficient and quick system.

**A.1.10. Interview at Directorate General for International Affairs.**

This Directorate has a lot to do with the satisfaction of international clients. The following was discussed.

Bank 1 has a long international history. From the beginning of this century, it has been abroad in many countries and former colonies of the home country. It is natural for Bank 1 management to assume that, on this historical basis alone, Bank 1 will be the most successful and the foremost bank by 1992 to take care of the needs of a united Europe.

However, Bank 1 offers basically wholesale banking to the world. Inside home country, however, they are a universal bank engaged in all kinds of financial activities. Because of its largeness, it is now beginning to assume a universal profile at the world level as well, for example, by offering large companies commercial loans. It also offers short-term financing, not participating in efforts of the company. So with basically a universality of purpose in markets in the domestic sector, and growing this universality in the neighboring countries over the last couple of years, and expanding to other countries in one focused product, we can see Bank 1 has a mixed strategy, trying to use the right strengths in the right markets. However, eventually, it sees itself as offering all products in EC and in most other countries.

**Author's Comment 9:**

With so many different time zones involved, the inter-temporal updating of the systems in different locations and the *collective* updating at some central location will become a major problem to reconcile with. *In spite the standardization efforts, this lag may seriously thwart efforts to regionalize (or globalize) information systems.*

**A1.11. The Chairman's Directive.**

Due to the regulations of the European Communities, Bank 1 has changed its strategy over the last couple of years. The Chairman of the bank has announced since the First Banking Coordination Directive was announced by the Commission – and repeated frequently thereafter – that the bank will become

**a universal bank in all different countries of Europe.**

**A.1.12. Subsequent Major Activities.**

This implies that their network of systems is also going to expand and also that their systems will have to be more versatile and integrated across borders. The major achievements are that Bank 1:

- is installing new branches

- is buying networks in different European countries, where they have never existed before
- is investigating into mergers and alliances with banks elsewhere
- is even considering buying American banks in EC

Beyond EC92, they are actively considering looking into the global role in general. But they are

**not sure if after 1992 they will have the same broad range product and activities policy for the other countries**

as geographic expansion may limit the rate of product/service expansion everywhere. This is because it will be difficult for them to manage several products, several customers, several regions and different cultures at the same time, and be a heavy load on the Systems Department.

The number of branches in non-home countries is very significant now. This simply means, from the systems point of view, that they will not just quantitatively growing in larger numbers in terms of hardware and software operating teams, but that it will be qualitatively necessary to assimilate, interconnect, and consolidate information from all these branches.

**And this is drawing heavily to their systems overheads.**

They have a very large stake in countries with fast growth rates, and looking at these activities of their historic existence as well as their current mergers, takeovers, and alliances. Overall, they have a reasonably healthy



positioning in Europe. It is difficult to compare them with their competitors, the principal one being Bank 2. But it can be seen that they have a more established background in general in Europe and also in the world, when comparing with home-country banks.

Because some banks are difficult to buy today because of capital and other regulatory requirements, Bank 1 is continuing its expansion and hopes that it will buy some of the banks in these other countries as well when the Second Directive takes on more force.

#### **A.1.13. Real Corporate Practice.**

In spite of systems standardization efforts and a tilt towards centralizing overall methods and procedures, Bank 1 has a corporate philosophy of decentralization. Similar to Citibank in the U.S. – though it may not be as ahead in technology as Citicorp – in EC it is perhaps the most decentralized bank today.

Most of the decision-making in Bank 1 is done by local management in the different areas, both within home country and outside. At the same time, at the organizational level, they have quite a closed communication in spite of the decentralization. It seems that decentralization therefore is ingrained in their culture and communication.

This strength of organizational communication at the personal and manual levels is an asset for the company. In the 1970s the bank decided to have the same strength translated to its technical connectivity among data processing

departments. So standardization of a Common Language was really to enhance communications through commonality of procedures.

Standardization of internal procedures implies that wherever a Bank 1 branch exists, its manual methods, its functional procedures and its editing, etc., would be well defined and practiced the same way everywhere. Where such standardization would not be possible because of local conditions and the international network, the non-standard or deviation from standard would be taken care of as additional workload by the local management. This would be a "small" price to pay for the large benefit of remaining unified through common standards.

**Author's Comment 10:**

The cost-benefit of additional workloads at autonomous, non-home-country branches may now be offset by the cost-benefit of CIS implementation. Standardization, in fact, should provide Bank 1 with a unique cultural edge over other banks in EC to first go for a composite system.

During the last 12 to 15 years, in order to sustain autonomy and institute these standardized methods and procedures

**the software development began from low profile products solving general problems to a high profile and high visibility solution,**

not only providing software for all kinds of problems and producing programs, procedures and macros in the computer, but also in standardizing a range of equipment. This provided another benefit – saving time and turnover costs in purchase of equipment. Having a standard policy throughout the company to purchase equipment for specific needs would make quicker decision making possible, would also enable communication among equipment within the company, and would fetch discounts.

In the software business, they realized that they were not very sophisticated about 10 or 15 years ago.

**They wanted to create their own global software applications.**

They made a set of programs and packages for uniform international administration. Bank 1 invested 100 to 150 man years into this development work. Most of the subsidiaries and branches were equipped by this standardized software. But over the last 2 to 3 years, particularly due to the Second Banking Coordination Directive, differences started emerging as branches and the network started cropping-up.

**Interesting things surfaced because the market started changing in newer and different ways.**

Sharing the passing book SWIFT system concept for global custody was a new arrival that helped in handling treasury affairs. This was a welcomed and

fortunate happening. But for the remaining types of banking activities, similar advancements still need to evolve to share communication across organizations.

Bank 1's Systems Division was not impressed by the market availability of connectivity software. Having a large department they started developing all systems products over the last several years. Now that the market pressures have changed and, at the same time, new Information Technologies has come about,

**they find that good quality, reliable software with impressive functionality is available in the market.**

The new trend in Bank 1 is now to buy standard software from the market and do less development in-house. Such procurement could also be standardized so that the subsidiaries, the branches, as well as the head office, while having the same methods and procedures, and procure the same software.

**Author's Comment 11:**

With an internally standardized approach and the external purchase of software, the bank may be gradually driven to adopting vendors' standards rather than the bank's own desired corporate standard. *With different vendor platforms across the region, it will be difficult to decide upon a standard.*

The communication and connectivity aspect is coming to light now. In the past, such a connection was not necessary because sophisticated customers did not exist, and the coordination directives of the EC had not been promulgated. Now that the market is changing rapidly, it has become mandatory that

- exchange of accounting information
- exchange of Treasury information
- exchange of account and product information
- consolidation of these

should happen regularly. **From** a quarterly, manual scenario **to** a monthly and perhaps **even** weekly automated scenario, there is a pressure on the industry to perform well, better and quicker.

#### **A.1.14. Conflicts in Standards.**

There is another problem. The definition of terms across boundaries is difficult for the bank because

**there are different standards to define terms like loans or credit papers**

So, a *universal classification* is needed *for all kinds of products*. For the past few years, the Systems Department is trying to define such standards across the geographies in different regulations and forms of credits and loans. This is necessary to be able to compose information across boundaries. The Common language is defined as a general specification for the description of the type of

banking activity in the world at large which will be functional for both domestic as well as international markets.

They provided a common set in data centers in each country, and they had a good set of exposure. They believed that telecommunication was easy through international switching, but did not have a private network of telecommunication. They have now also begun a project to put a private network in place. They have considered a backbone of four nodes at these locations: Tokyo, New York, and two EC-based centers. Around these nodes, they will support approximately 60 countries by 1992 and also connect to the Bank 1 home country branches.

By the end of 1992, they expect the entire network – local, domestic, and international – will be on the nodes. And that the standard Common language be developed top down rather than bottom up to facilitate the integration of information.

**Author's Comment 12:**

Laying foundations for telecommunications is an excellent idea but the bank must not forget that beyond this *physical connectivity*, higher level connectivities (logical, organizational, and strategic) will also be required if the bank seriously intends to integrate its internal divisions for information composition and its industry/strategic sectors for alliances.

There are, however, problems envisaged in this as well. Home country is a centralized country. Their regulations, habits, language, etc. are religiously practiced everywhere in the home country, and in this respect, all branches are quite homogeneous. The opposite is true in other countries. Upon gradual convergence of 12 cultures, the homogeneous nature of branches even within the home country will change to some *common average* of the EC, and the general market will appear different than now.

By the end of the century, Bank 1 expects that the common set of currency and harmonization through ECUs would be in place. With more branches in the EC countries, more sophisticated processing will need be delivered to each of the countries through this *common currency*. (Refer to: 'A Note on ECU' Section 3.16).

#### **A.1.15. New Products Emerging.**

Some new products are already coming into picture that will spread in all the countries of the region, and will be competing with outside the region with other countries. Typically, these will include commercial papers and consumer and credit banking. Transactions with international mutual funds are now possible. In the past, it was not possible to participate in these. Today, there is a growing rush for them, and there is a lot of selling going on in Luxembourg as well. [ It was not even legal a year ago, and so there was no rush].

**Author's Comment 13:**

New products, while providing new opportunities for economic rents, also create the problem of adding on another file or data structure. To get information on a client using other services as well as new products may be difficult owing to differences in the old and new data structures. Standards may also have changed in the meantime.

**A.1.16. Reinvestment.**

With the deregulation directives, the finance ministry of home country and other countries are allowing capitalization and reinvestment of profits without announcing dividends. The mutual funds investment is now very lucrative as a product and as an activity by the bank.

**This causes the problem of adding on and extending systems as the market  
begins to change more and more**

There is pressure to become more and more innovative after the unification. More new products will emerge, newer activities will be required. Newer competitions will evolve, and the systems developed will need to be extended beyond the current concept of customers, products and regions. This is very difficult through the existing systems. However, the bank expects that as regulations will eventually promote harmonization in the EC, it will enable



standardization of systems and procedures to set in more firmly into the computer systems by all various players in the field.

**A.1.17. Consolidation.**

Some features of Bank 1. It has 10,000 industrial commercial customers and 6,000 bank customers. They are all international because they exist inside as well as out of the home country. Their transactions take place in home city, even if their booking or exchanges are done outside.

As part of standardization, Bank 1 has developed an international definition of accounts, an accounting number which is a unique ID in the database and which is updated daily. So, there is no problem in updating a customer if it is a company throughout Europe. But if it is an individual account of a human, then such information will not be updated every day and will not be available on a consolidated manner throughout the EC region.

**Author's Comment 14:**

Semantic matching of names and attributes will still be difficult. How will a unique customer be identified?.

Updating will be done on a monthly basis in a batch mode upon closing.

**Not only individual customers, but sometimes even groups of customers will need consolidated information more frequently than the provision set forth for updating.**

So, this is going to be an area where Bank 1 is giving more attention in preparation for EC unification.

There is only one hope which Bank 1 expects very much, that is, that individual customers operate from *only* one place, i.e., not to operate accounts in more than one place at the same time.

**But this is highly unrealistic**

because the barriers to trade, the barriers to movement of capital, and the removal of visa and border crossing regulations will provide more mobility and business possibilities to customers, and so they will like to have accounts of their individual or their family in different countries of their interest. At the individual level, they may also want to invest or buy securities, etc., and consolidated information would be required by them if they want to be served well. Bank 1 is looking into this very seriously.

Composite Information System laboratory concepts are very relevant and pertinent to such a bank. Even though Bank 1 has come somewhat in line with similar paradigms, it is missing on some fundamental issues which will qualitatively be different from what CISL will have to offer or what CISL is focusing upon. Typically, these relate to instance matching, and inter-temporal updations.

In terms of commercial commitment, Bank 1 installed the same database in different branches, on a UNIX platform. But the communication among the systems, even within home country, is not very efficient. Therefore, manual data is flowing through the medium of diskettes, i.e., at the end of the day different branches, or at the end of the week, different subregions are shipping diskettes to the head office, which downloads them to consolidate data in some central system.

The international switching is efficient for small volumes of data only, but Bank 1 has a very heavy volume and throughput in this application. In fact, they expect this to grow even more with the unification and the flow of currencies across borders. There are many needs that are not even obvious right now, that will become customer perceptions for new products tomorrow, and will appear over time.

## A.2. BANK 2

### Interview with Director of Systems Development

#### A.2.1. Background.

Bank 2 is presently focusing on developing a worldwide Executive Information System (EIS). It is watchful about the global image its strategy is to cast in the new market, particularly to its customers in the banking community as a whole.

#### **There is heavy emphasis on global image**

on customer responsiveness, and on sanctity and conciseness of information. It is this consolidation for executive use that Bank 2 is approaching an Executive Information System (EIS) solution.

#### **Author's Comment 1:**

An essential prerequisite for any Executive Support System is the on-line availability and soundness of back-office data. Additionally, updating data from the ESS front-end by executives in different countries of the EC region will require careful Database Management System planning, administration, and security controls.

### **A.2.2. Past Growth.**

Business growth led to inflation of data and hiring of more people for crunching it. They got so much data in the information system, (everything that each department ever wanted to have), and their business grew so fast that for Bank 2

**to consolidate on an international basis and to get the global view of data back to the management became horrendously difficult.**

The bank believes that

**traditional systems have always been static systems.**

Once a main system has been installed, major changes cannot be made to it. New main-frames do not get ordered or replaced with every major change owing to fast growth. Changes in the organization can not easily be incorporated into the mainframes installed for very different business environments. Thus, with the changes in European region, it became difficult for the bank to understand the position of the several important customers, i.e., it was virtually impossible to collate information on a common platform from the hitherto disjointed systems that Bank 2 had all over Europe.

The bank felt a strategic need to develop a system providing executives with a global view of all their international customer accounts and consolidating

all the data in very concise manner for management consumption to ensure response to important international customers in a reasonable length of time.

**A.2.3. Focus on Executive Information.**

This need for communication throughout the organization, was felt almost a decade back when the decision to improve systems by necessarily building an EIS was taken. Bank 2 believes that

**correct availability of information on customers is a key to negotiations and negotiations of all kinds,**

especially with the larger accounts. The large accounts come to the bank with one set of information about the accounts, claiming that they have a certain level of total deposits with the bank in different forms. The bank itself either does not have the exact figure readily at hand, or has slightly different data or format of data. Therefore, this kind of information is important in meeting the challenges of a unified Europe of tomorrow.

**Author's Comment 2:**

It is clear that Bank 2 is looking for organizational connectivity. It is aware of the need for other kinds of connectivities but has not done much else other than stressing the need to develop some common standard.

Eventually, Bank 1 wants to not only put its current, large international customers, they would also like to bring in small- and medium-sized customers. In fact, they believe that

**all customers are important and the bank wants to treat all of them importantly.**

#### **A.2.4. Segmenting the Market.**

Due to the magnitude of this problem of putting *everything* on the EIS, Bank 2 is developing a matrix which providing to them the customer segments and the frequency of operations of their accounts. This way, the bank intends to broadly classify customers on the basis of their account-sizes and operation over time.

Even *this* information is currently difficult to obtain from the systems, because the existing computerized systems cannot be integrated and this level of composition for all accounts is not possible today. Such a consolidation will take lots of time and may not necessarily present it concisely to the management.

#### **Author's Comment 3:**

Clearly, Bank 2 here has faced problems of logical connectivity. It is clear that, even attaining a successful set of standards, there will be problems of inter-temporal updating, currency conversions, product-wise aggregation, etc.

#### A.2.5. Developing an Outward Focus.

There is another important focus at Bank 2 today! The Directorate of Information Technologies in Bank 2 is also recognizing the fact that the world is economically progressing at a fast rate, internationalization is progressing fast, and market competition is becoming tighter every day. And therefore

**any strategy that does not look outward in addition to looking inward, will not be a useful strategy in the long run.**

Bank 2 is therefore trying to look at external data as well as external markets, which is data about the market, about the industry, about banking community in general, and then using these various indicators for analysis purposes by senior and top executives, *particularly* for comparison of how well the bank is doing as well as how internal data summaries look.

#### Author's Comment 4:

This falls partly in line with the Executive Information System theme, but it also calls for *external* composite of information. A meaningful way to achieve this synthesis would be through strategic connectivity.



**Author's Comment 5:**

For all external data and connectivity to such 'outside databases,' it would be important to liaise with the CEC regarding the development of a *Regional European Database Standards*. Failing such a standard, Bank 2 will need to identify other banks that may be willing to evolve an *Industrial Standard for Information Composition and Communication*.

Bank 2's home-country banking is based on around 2,000 branches within the country. They want to integrate information from databases on domestic customers with databases of their international customers. Bank 2 wants to achieve this consolidation within ten years, desirably less.

**A.2.6. Technology Platforms.**

Automation in Bank 2 started some 20 years ago. They had set up a branch network on the a vendor's Local Area Network (LAN) system and connected the computers on these LANs to their head-office main-frame from another highly reputable vendor. Because of the stage of evolution of Information Technology (I/T) at that time, nobody used to care about such systems talking to the entire branch network (i.e., the organizational network), because such a need did not exist at that time.

The computer-market was growing steadily but not very fast. The external economic pressures were not severe. The I/T arena was used for traditional Data Processing (DP) and, in the most progressive companies, for providing Management Information Systems (MIS). I/T was not used for strategic advantages as it is now being used in the 1990s.

Today Bank 2 has many products and applications. These have been developed over a period of the last 15 years. Most of these applications have to be run three times, once for the domestic network, once for the international network, and once for the head office and the integration purposes. This is

**causing a lot of drain on the resources**

and is in fact a very redundant piece of work, impeding productivity growth. The systems people at Bank 2 have smartly recognized this, but the solutions of integrating take a longer time. Therefore, Bank 2 is looking at various possibilities of its internal standardization. It is also willing and open to work closely with academia to investigate the frameworks for such developmental activity as long as its proprietary systems are not endangered or exposed to competition.

One possibility being pursued is the installation of same or compatible systems. Bank 2 is trying to develop a unique system throughout the world on another vendor's main-frame and connectivity platforms. So, wherever its current systems exist, Bank 2 will replace them with a single-vendor, single-platform, and standardized-software solution. This system – to be implemented gradually – would be distributed in all the branches domestically. For foreign

countries however, due to economic and other operational problems, there will be a significant difference: both the hardware platform as well as the software will be different!

**Author's Comment 7:**

So, the integration envisaged in this way is to have two types of systems but on similar protocols. An intensive network for home country, and another for the rest of the world.

**A.2.7. Looking for Additional Paradigms.**

Possibilities for developing a tool kit similar to that at MIT's Composite Information Systems Laboratory (CISL) has also been envisaged. But such a choice needs a lot of investment in terms of time, money, effort, and expertise and then sustaining these over a long period of time. In discussions with the author, the executives at Bank 2 showed interest in understanding CISL mandate and effectivity of CIS/TK. But investment into the dual-standards for I/T platforms is already underway, and it is not clear if a change of direction against this duality will take place through CISL/TK. However, the problems being investigated at the bottom line are similar; integrating heterogeneous databases across boundaries.

### A.2.8. Standardizing Transactions and Modules.

Bank 2 is looking into yet another possibility; to have same software modules operating at the clerical levels (i.e., front-ends) of the banks on workstations. These applications would be

**standard software modules developed at the bank's Directorate**

and supplied to all branches throughout the world on *one* standard workstation environment. It would be easier to train all staff on such a *homogenized working environment* where clerks or operators would be entering 'canned transactions' through workstations. These transactions would then be run in the back offices through standardized applications. Finally, communication pipelines and protocols would be designed to link up results of these application-runs, linking up through a common software, tagging from all locations.

#### Author's Comment 9:

Imagining that all cultures in the 12 countries will adapt quickly to the same transaction processing work-style is being very optimistic. The initial unification will be at the economic level – the last one at the cultural level. Any solution envisaged without keeping (and allowing) different cultural practices and life-styles, will be incomplete and should not be used to base a system upon.

**Author's Comment 10:**

Even if work differences are standardized quickly, the time <sup>1</sup> differences will still impede updating. Additionally, at the 'crunch time' when everybody in the head-office may need completed information on the EIS, it may not be available owing to inter-temporal updating taking place through a traffic over the telecommunications backbone of the bank.

The standard-modules may serve only as an interim solution in the home country only because the software at each branch would not require substantial tailoring and uniformity may be easily preserved for some time until any major change takes place.

**Author's Comment 11:**

Upon discussing the CIS/TK concept with Bank 2 executives, it seemed clear to them (as well as to the author) that no matter how much standardization is done, a valuable solution will not take place unless concepts of *flexible modularity* for local levels is fused into the solution to include different timings and currencies and translate them at a central level.

---

<sup>1</sup> And currency differences until the time that EC12 literally begin using the ECUs, which does not seem likely in the near future.

Various interstate accounts at different levels, where parameters change from time to time and from country to country and region to region, and which will take into consideration the different time zones and the closing times of the day will essentially have to be given importance in designing a solution.

The scenario of two standards coexisting, one for inside home country and another internationally, seems a good interim solution to Bank 2's executives because it appears lot better than even the existing domestic situation. For example, the executives in Bank 2 feel that when people are transferred from one city to another (within the home country), they feel a new cultural shock. The differences across the cities (major sub-regions) of the same country are also an important consideration when it comes to culture. Besides, each sub-region has had a different evolution in terms of both, cultural evolution and technology deployment.

#### **A.2.9. Bases of Four Major Handicaps.**

There were four most important types of handicaps that Bank 2 identified.

**First, the flow of information is *not* on-line.**

It *has to be* on-line globally for data transfer and for information sharing. Something similar to "Passing the Book" approach <sup>2</sup> (which Bank 2 is also

---

<sup>2</sup> A system for Treasury accounts where books are closed in pre-determined time-slots and then passed on to the next region Westward. Thus, the information, once closed by a region, travels from Tokyo to London to New York, and then Tokyo again.

participating in) for securities trading, needs to be set up for commercial accounts as well.

**Author's Comment 12:**

Passing-the-book is a single-product system (only for certain securities) and so, is simple but insufficient for handling all products, even all security-types. The Second Banking Coordination Directive allows for dealing of *all* products by all banks throughout EC12. Using a restricted system architecture will not provide the advantages of a deregulated environment. Besides, such a system will *create* the need for additional – and therefore heterogeneous – systems.

The more one aggregates and consolidates, the more composition there is inherent in such information. Therefore the bank

**desires to have its own global system that will contain the atomic data**

(i.e., attribute values), in its very elementary form and further information is derived or composed as and when required for any specific purpose for which queries or updating need be done.

**Second, the top management is more interested in profitability per customer, and profitability per product.**

Typically in Anglo-Saxon banks, getting a consolidation on profitability is an important consideration for management because monopoly of Bank 2 does not exist anymore in these areas. A detailed and regular understanding of every account and its profitability on a daily basis is essential to provide additional services to good customers in a growingly competitive environment. Bank 2 would also like to aggregate this over weekly, monthly, and quarterly periods for overall statistical analysis and marketing reorientation. However, this information has to be in the format of profitability per customer and profitability per product. This information needs to be current and available in the systems at all times.

The customer has become very sophisticated in recent years. There has been a growing change among customers of banks all over Europe. Bank 2 now believes that they have to insure a range of products that satisfies the varying customer needs. When a particular customer needs a *set* of products (or has a portfolio of investment), detailed information must be made available to the customer as a part of efficient service. Any organizational inefficiencies would drive the customers away to the competition. Now, the competition is not with other home country banks only – a couple of which are getting closer to Bank 2 in technological sophistication every day – but also with the American and other non-European banks based in Europe and having technological leadership in different ways.

So, Bank 2 has to match, at least, as much efficiency, product innovation, and supply of information as the other technology leaders in the market. There are several effects due to the Second Banking Coordination Directive (and other



related directives). This pressure is causing I/T to be employed in newer ways to help European banks meet the challenges of 1992.

**Third, the top management and end user not readily able to express their exact information needs.**

The these important information users (both, at the top and at the bottom) are nontechnical and thus, cannot express their specific requirements of systems. This is a professional-culture problem. They are mostly used to looking at things from book-keeping point of view (accounting perspective) and not the reality of marketing or the sophistication of I/T. In general, they may develop a tendency to be short-termed.

Executives like to develop products for and relations with customers to satisfy their impending needs. When systems personnel begin discussing with executives, concepts like data dictionary or like to get the discipline of sitting down and defining all data elements that would possibly be needed by these nontechnical users, the executives lack the time or even most friendly concepts in DBMS may not be that friendly.

**But time is running out quickly.**

Bank 2 already feels that they are late in the race, and they have to get faster to win the new markets and potential in Europe.

**Fourth, the relationship between the bank and customers has to be real time now**

particularly, at these two levels; the bottom line and the top. The Systems Department is facing a big challenge to do all this interfacing. However, the base of data as such is in reasonably good shape. It does not have major bugs or faulty entries that can impede an EIS development. In home country, Bank 2 has been *forced* to be good because their services are free to the customer, and so they *had to* automate quite far back, which they did. The automation (as mentioned above) in fact, started about 20 years ago. But in those days, I/T was not really used as a competitive tool. Most banks watched each other's progress quite closely and informally and mostly, developed along similar lines.

#### **A.2.10. Levels of Architecture Considered.**

With the markets becoming more regional, the environment becoming more universal, the laws becoming more deregulated for the 1992 unification, the problem of technological sophistication has no doubt arisen in Bank 2 (as in all banks).

The number of accounts in Bank 2 is literally in millions. In the application system architecture, the bank has four levels.

##### **A.2.10.1.**

The first level is called the **operational level**. This includes banking events. People have dependence of business. They are (totally dependent for) reliance on others. Through their actions, they provide banking events.

#### **A.2.10.2.**

The second level is called **reference level**. It includes the laws and rules of the environment in which the system exists. It validates information, since it is a dictionary, and allows application (development) according to laws and rules of the environment where the system is/will-be operational.

#### **A.2.10.3.**

The third level is called **synthesis level**. This aggregates and centralizes all the information. It gives the fine control or fine tuning to the general ledgers, after accumulating various geographical points.

#### **A.2.10.4.**

The fourth level is called **service level**. This provides common levels that can be accessed without going through the reference level.

### **A.2.11. International Consolidation using Architectural Levels.**

Only some internal consolidation can be done by the bank today. Also, some external is also semi-automated through the bank's internal proprietary reporting system. The state-of-art in Bank 2 is that, when a CEO makes a query, he gets the answers with a *reasonable* time lag, and this answer is *not always* wrong.

The standard operating system at the operational level has all the raw data, which resides there in the atomic form and which Bank 2 would continue to have. They know where it is residing and in what format. So, a specialist

decodes the request from the CEO, and in turn, requests the Systems Division to make available the files that contain such data that will provide the information required.

This linking translates into the Systems Department by way of a liaison file (or an intermediary file, if you will) in the main-frame. The results are derived out of this file. Then the result is routed upwards to the CEO. Because it is never elaborated, it is unassimilated data, it takes time for the process of translating it into a proper query and then locating the files that contain relevant data. Thirdly, the files are linked and the programs are run. Finally, the reports are sent back.

**This is a very long and costly procedure.**

It requires flexibility and availability of files, and should it continue, it would mean more overheads. Most importantly, it takes two to three weeks for a very general random query to be appropriately processed. And then, in general, it is hoped – but not assured – that the consolidation is correct, even though the data is atomic and often validated for such queries which are intermittent.

#### **A.2.12. Looking into the Future.**

The Systems Division at Bank 2 has had lot of discussion with users to get critical feedback from them in an effort to become industrial FSI leaders in Europe. They are trying, for example,

**to define the term "satisfaction" and to conceive what satisfaction means to  
different users**

of their systems both, within the bank and the clients outside. They are aiming at engineering a system (or a set of systems) based on their atomic data in such a way that will provide *means to satisfaction for their customers and their officers.*

It is widely believed that if:

speed could be increased,  
correctness of data could be assured, and  
real timeliness is built in

satisfaction as such would ensue.

However, these three things point in only one direction, which is that of providing a Composite Information System. Bank 2 insists that they will not focus on one or two products, and therefore will not only work in a segmented market, addressing a few segments, but

**will work across all segments.**

They insist that they will be a leading universal bank, providing all possible financial products to any and every customer that wishes to use its services. So, how do they position themselves in this context? This is a difficult question to answer for Bank 2, but after a couple of discussions of an informal nature, the

general opinion of the executive was, that in 1993, there will not exist too many mega-banks like today's 40 in European territory.

In 1995, for example, they expect that there may be only 8 to 10 leading mega-banks. Because of the 1992 directors, there will be mergers, acquisitions, strategic alliances (like few already underway), and these will cause only the most competent banks to survive. The smaller ones will either be acquired or will join hands and become conglomerates to share strengths and weaknesses in the industry.

#### **A.2.13. The Future.**

Being a totally private bank, Bank 2 has a different culture. It is one of the largest banks in its home country. They cannot easily get into alliances, unlike government-owned or public-fund-sponsored banks. Their stance is profitability on the basis of sound base in domestic market, and the extents of their products. Its international network of over fifty countries is bigger than any home country's bank. They plan on combining their strengths of a strong home country bank, a large expanse of international presence, and universality of their products. And they need to have systems that will make this happen.

Bank 2 is investigating into network topologies like ISDN. They believe that when ISDN is fully available, more coherence will be required. They realize that they cannot put such a system into running that keeps validating throughout the day, (current validation takes a lot of time). About 40% of Bank 2 data is validated during the day and 60% is sent (piped and processed by

volumes) for processing in batch mode. So, a real-time on-line system in 100% mode is very, very difficult.

CIS/TK concepts could assist in real-time processing on a continuous basis. The possibilities thus far considered or ventured into by Bank 2, are still open to the executives. Any solid paradigm that provides for global, universal banking in-keeping with the heterogeneities of diverse cultures, practices, timings, etc. will be seriously considered.

## **BANK 3**

### **Interview with Senior International Advisor to the President General**

#### **A3.1. Background.**

The Senior International Adviser is responsible for coordinating the international network of Bank 3, and this is the largest investment bank in its home country. It exists in several other countries, which were former colonies of the home country. Even now, the Home country's government extends loans and credits having many multi-partite agreements with different governments in four continents. Bank 3 invariably assists in the investment schemes that emanate from such agreements.

#### **A.3.2. International Problem.**

The problem exists with consultation between branches and subsidiaries in all Anglo-Saxon countries and those of the practices in the home country. These differences are considerable. A consulting company, has helped Bank 3 in designing a pattern for consolidation. This pattern is now being used all over the world by Bank 3. It is to a large extent a semi-automated pattern, i.e., is partly on computers but to a larger extent manual.

**The degree of computer involvement also varies from country to country and location to location.**



Another problem is of extending provisions from one country to another. Because regulations differ, the extension of provisions have to differ as well.

**This means there is a problem in trying to impose standardization or standard procedures.**

Hence, the pattern has to be *variable*. So far the bank has a fair view but not a complete one about every moment in time. The bank has to consider both the degree of local provision as well as the state of provision at headquarters to meet the requirements of central bank of the home country.

**Author's Comment 1:**

This is a representative case of hybridization. It presents a 'coalition' of different working procedures in a Regional perspective. It is also hybrid because there are varying degrees of automation involved. This is an ideal environment to bring in information composition *bridges* into test.

**A.3.3. Major Problem of Tax Benefits.**

It is not only difficult to have good consolidation. At the same time, it is difficult to get fiscal and tax optimization done simultaneously. If consolidation becomes the main issue, then the optimization of fiscal and tax policies becomes difficult because these vary from place to place. If fiscal and tax optimization

become the main objective of the bank, then they have to impose some kind of standardization which dilutes the purpose of good consolidation.

**And so there is this give-and-take that the bank has to undergo all the time.**

Since the benefit in countries of lower rate of taxation have to be used in making investment decisions and in setting up a good policy of where to invest,

**the process of consolidation is complicated by the rates that vary throughout the region**

where Bank 3 currently exists. Instead of just bringing to books the data as it is in the various scattered portions of the world, Bank 3 has to level off the benefits of high level of gains with areas of low levels of taxation.

**Author's Comment 2:**

There is involved here a factor of intricacy that cannot be easily picked up by a system and so, uniform implementation across EC and around the world, may be virtually impossible by 1992. Translation of different interest and tax rates, as they vary, can only be accomplished by introducing organizational connectivity and strategic connectivity.

#### **A.3.4. An Ideal Goal.**

An ideal goal would be to have a system that would rapidly consolidate as well as provide tax benefits for any investment that the bank considers making, without interfering with the bank's sound policies of investment.

**Such a system currently does not exist.**

The consulting company's hybrid system and manuals are indeed helpful, but are not a completely computer-based system that can take into consideration the warring factions of consolidation versus fiscal and tax optimization.

#### **A.3.5. Another Major Issue.**

One of the complications that goes into the investment banking systems is that

**the dates of fiscal years for closing are different**

i.e., different parts of the world have different annual years, beginning dates and closing dates, and there are not many overlaps. So, it is very difficult to have a clear view at the beginning of each country's year and as to how the bank is performing all over the world.

**Author's Comment 3:**

The problem of inter-temporal updating and keeping a system on-line across the regions can be solved through the introduction of a real-time system. Because the degree of automation is not the same all over the EC, this option/investment will not prove beneficial at all. Instead, a set of *bridges* across system types will be a prudent investment.

**A.3.6. Need for Composite Information.**

There are three types of *synthetic* informations frequently needed by the bank. These include :

**A.3.6.1. Information by Country.**

Information is required on a country basis. The Middle East, for example, is where lots of loans and borrowings and commitments exist. Currently, the situation of Iraq and Kuwait have mixed-up the picture. There is also a lot of investment in other Asian countries where political delicacies complicate the issues. So, a good system that will illustrate how good the information in and about a country is or how well the bank's portfolio is doing there (i.e., how they can diversify their risks) would be an excellent system. It should be a dynamic system because situation never remains the same in the EC and around the world.

#### **A.3.6.2. Information by Company.**

Information is very often required on a company basis. There are many large companies that have invested in the bank which has further invested in industries and different portions around the world. So, Bank 3 has global commitments. It has to spot its transactions with a certain company, especially when they get in touch with their CEOs and have to answer the potential claims of these CEOs, or to make agreements with them in the long term and the future.

#### **This kind of information is very frequently required**

especially because the competition among the investment banks in the region as 1992 gets closer is becoming tougher and tougher. Bank 3 has set itself to become the model bank of investment in the Pan-European space and therefore, it wants to have policies that are modern, forward-looking, and futuristic. Bank 3 is considering this issue seriously now to benefit their clients worldwide.

#### **A.3.6.3. Information by Products.**

Certain types of investments have specific needs. For example, in swaps and options, Bank 3 has to rate the risk of the bank.

#### **Risk does not show up similarly in all parts of the world at the same time.**

So, in swaps, for example, Bank 3 has to see Japan versus Japanese banks. How are the investments in Japan different from those in Japanese banks and

how is Bank 3 doing with respect to Japanese banks? This kind of information on the basis of financial investments and their global comparisons is necessary.

**Author's Comment 4:**

The first two consolidations (i.e., 'synthetics') require two kinds of matching; semantic matching for entities being compared, and inter-temporal matching for logical consistencies in the systems being updated around the clock.

**Author's Comment 5:**

Comparisons with 'outside world' implies that some information based on external data has to be mixed with the information based on the internal company data. This comparison obviously needs be made on a regular basis in order to remain competitive as a specialized investment bank of the region. This implies a need for strategic connectivity.

**A.3.7. Organization of Activities.**

Bank 3 has split the bank into eight distinct type of activities with well known borders. Each activity has its own forecasting, profitability, and money

flows. So, partially the problem of financial investment, assessment and comparison is hindered through their organizational structure.

#### **A.3.8. Result on Computer Systems.**

At the computer systems level, this faces a complexity of different types of computers that are now being used by each of these different segments. Reliance on

**standardization may provide hope for cross communication of data**

and consolidation at the higher levels. But Bank 3 is not yet sure if this will really happen and if this is the best method of achieving it.

The other two solutions, i.e., based on the countries and on the companies are very difficult to implement. The bank has tried to consolidate on these two bases, but has not yet come out with any reliable results. The primary reasons are that on the country-basis, difficulties arise out of differing practices from one culture to the other.

Even at the advent of 1992, there will be local differences between the British, the European and the U.S. ways of banking – the banking practices will not suddenly dissolve their different practices.

**These differences have to be reconciled by the computer.**

There are also discrepancies in the closure times of the various countries in the EC region and its allied countries around the globe. Then, there is discrepancy in the regulation of center banks, home country's versus others.

**Daily closing at the bank is not possible because end of the day time is not the same in each country.**

A metaphysical question that the Bank 3 is trying to find the answer to these days is :

**What is a day? What should constitute the time limits?**

Currently Bank 3 is using "passing the book" approach for currencies in Yen and U.S.Dollar. The book is electronically passed from time-zone to time-zone, and all information is passed in these two currencies. When the financial places close in one time-zone, the taking-over country knows the latest exchange rate on that day.

Basically, it is a hierarchical conversion of currencies from the different basket of currencies available for trade that day. They are all converted into standard yen and dollar conversion rate as of that day. That conversion rate, and the result in \$ and ¥, is passed on in the book closed to the next opening region which manages the book and subsequently passes it on to the next zone. Running this global book is currently being handled by a hired network service, like most other banks in the home country which, in turn, hires these services from the telecommunication industry offering them.



### **A.3.9. Defining Consolidation.**

The bank does have a definition – at the philosophical level – of what is a good consolidation.

**Consolidation is the most accurate composition of information with shortest possible time delay.**

To achieve consolidation, existing technology solutions cannot be used to solve the corporate problem as such. All banks have to go on-line in the future. So the solution will not be a corporate one alone. It will have to be shared across various companies and various financial institutions. It will be more like a strategic alliance.

**Author's Comment 6:**

This sharing of information clearly points towards strategic connectivity. To sustain this, organizational connectivity will also need to be ensured at the internal corporate level.

### **A.3.10. Criteria for Future System Selection.**

Quickness of consolidation, profitability, efficiency, accuracy, **with** fiscal optimization and complete satisfaction of local managers who endeavor to make

highest benefits to the customers are going to be the important factors that will help in the selection of a system that Bank 3 would like to have in the long run.

It would like to use such a system to get the maximum benefit out of 1992, not only in the Pan-European space, but on a global level. There are two other factors that are very important important.

First, is the

**exchange of commission**

within the same country, with the neighboring countries, and with rest of the world. This should help in deciding how to split the commission with other countries.

Second is the

**splitting of the commission with the headquarter expenditures.**

## Interview with Vice President for Asia/Pacific Region

### A.3.10. Historical Overview.

The Vice President interviewed looks after the Southeast-Asian region network of Bank 3. The meeting with him was to learn about the history of the bank and general user's perspective of Information Systems progress and deployment in Bank 3.

Bank 3 started as a merchant bank, with basically networks and retail. It is now more into corporate banking. For historical reasons, Bank 3 is in four continents. There has always been a tradition to be an international bank. The strategy is again towards merchant services rather than retail products. So, they have a specialized product focus.

**There is no other way that they can compete with their main competitors or other banks, unless they focus on the product and specialize.**

#### Author's Comment 7:

Since Bank 3 is focused and specialized, it will be following a niche product approach. As such, it may have fewer logical connectivity problems due to few, simple products with majority of clients holding large sums. However, because of its stress on the EC and international character, Bank 3 will need (and heavily depend upon) organizational and strategic connectivity.

Even though their interest is not to compete for the sake of it, they would like to excel in one area, i.e., merchant banking. Within merchant banking, their intent is to develop sophisticated tools and competencies unmatched by other banks of similar size. In Europe, Bank 3 wants to become a big merchant bank in order

**to tackle 1992 problem of intense competition.**

#### **A.3.11. Method of Establishing Niché.**

The bank is actively trying to do several things in order to establish its niché and pursue its Cross-integration policy for 1992 and a Globalization policy beyond.

##### **A.3.11.1. Buy Stakes Elsewhere.**

Buying stakes in merchant banks is an active strategy at Bank 3. It has bought a leading name in merchant banking.

##### **A.3.11.2. Develop Two-tiered Approach.**

Entering into other *special* areas like private banking, institutional banking, and managing big firms' accounts.

##### **A.3.11.3. Go into Joint Ventures Overseas.**

Using the existing strong international network to its advantage, getting all kinds of businesses. In Europe, also providing corporate banking. Having

ventures overseas in export credit, project financing, local credit, etc. Use these resources to invest overseas as well.

#### **A.3.11.4. Expand into Areas of M&A.**

Establishing offices overseas independently, where emphasis is on sophisticated tools in mergers and acquisitions (M&A), project financing, etc.

#### **A.3.12. Overall 1992+ I/T Strategy.**

The overall strategy is on the following four lines :

##### **A.3.12.1. Asking for Structured Information.**

Bank 3 will be highly successful as long as it gets structured, analyzable, and correct information.

**Without this, the bank can be in severe danger,**

especially in light of the changing environment of 1992.

##### **A.3.12.2. Making Appropriate I/T Available.**

In certain deals, special type of information technology is required to analyze a corporation that needs to be taken over. As long as these technologies are available through the I/T departments, the bank will be in a safe position to assume that it has done a complete analysis.

**But without such technology, things will become very risky indeed.**

Analyses are required quite often now because of the higher level of throughput, again generated by the 1992 activity.

#### **A.3.12.3. Accelerating M&A.**

The holding company of Bank 3 has excellent tools of the trade. It has used these to acquire many banks and branches of foreign banks. This M&A activity will continue. However, once acquired

**the data from these acquisitions needs to be merged with the data of the previous set of companies.**

This is going to be a horrendous problem unless sophisticated systems can use the data collectively.

#### **Author's Comment 8:**

M&A – as Bank 3 well understands by now – causes the problems of back-office (i.e., data-center) synergies. Amalgamating (i.e., composing) information from merged (or acquired) components often can not be easy. Accounting systems are different, technology platforms are heterogeneous, managerial practices and methods are radically different, etc. Accelerating M&A may not be a good solution as such 'associative' problems may be compounded.

#### **A.3.12.4. Investing in I/T's.**

When Bank 3 makes a bid, it has to match the bid and provide good economic analysis, data processing, and information collection and assimilation to evaluate the bid before making it. Unless the Information Technology can

**provide coherent information from different sources**

about the company being taken over or about any project being financed, the bid will not necessarily be scientific.

It has often been the experience of Bank 3 that, unless there is enough threshold in a project, and

**unless it is evaluated correctly, the takeover usually becomes an emotional problem rather than an economical one.**

Because of the stakes involved in making commitments, the returns are emotional rewards of having taken over or having financed a project rather than the economic rewards which the business really should have. There is enough time gap to value the effect of analyzing the criticality of information systems that go into matching the bidding. By that time the diversification of risk has taken place enough to value this effect further.

### **A.3.13. Poor Reading of Current I/T's.**

In general, the bank does consolidate its accounts, but the overall feeling is that

**the information systems are not fast enough for this consolidation purposes.**

They are quite reasonable when compared to the other banks which also take large amounts of time, but then there is no reason why Bank 3 should not become a leader in consolidating information faster, quicker, and more accurately.

#### **Author's Comment 9:**

Systems do become slower in such processing because of two reasons. First, in a batch processing mode, all transactions (or models) have to be loaded in a certain order. Once the order is collected and order set, batch processing begins. There is waiting, checking, etc. time involved. Second, in certain systems (typically, heterogeneous), on-line systems need 'translations' of different transaction-types before processing can be done. This is besides the fact that all data has to come in. On the other hand, a set of 'bridges' meant to make the heterogeneity transparent to the user, is a faster translation process. Such a process is provided in Composite Tool Kits.



#### **A.3.14. Poor Data Management?**

It is also believed that the initial data capture may be somewhat incorrect, because sometimes the final information is not exact. Perhaps the bank should

**give higher compensation to the employees at the initial data capture level,**

i.e., at the front-end as well as in the back-offices.

The central database has to have absolutely atomic and accurate data, but this is not necessarily the reality now. The only consolation is that

**other banks also and other industries using information technology are also in dissatisfied with the central databases.**

But there is no reason why the bank cannot find some way of getting around this problem.

## Interview with Director of Development for Home Country Systems

*Also Present:*

Joint Director, International Coordination of Systems and for Organization of Information Systems

### **A.3.15. Systems Development Concerns.**

Because of the important position of these two systems executives, three joint meetings were held with both executives. The discussion covered lot of ground; from domestic to international operations, problems being faced today, agendas for the future, and particularly – the problems related to cross-database communication and information consolidation at the bank-level. Extracts from the interview, with relevance to information composition issues follow.

The Director interviewed is directly involved with the development of systems and provision of systems services to bank's executives. The Joint Director is working on foreign banks/branches and the integration of their data at the head office. The functions of planning, quality assurance, logistics, telecommunications, and other operations of the organization also fall under the division managed by the Directors interviewed.

### **A.3.16. Need for an Integrated Architecture.**

The major challenge of the bank today – as jointly stated by these two senior executives – was to build an architecture for an integrated system

*throughout* the bank. In other words, the bank is seriously considering integration of its information from branches and EC country headquarters.

Bank 3 is building a new architecture for the last five years. They believe that the long wait will bring fruits when this effort underway is completed within the next two years.

All this started with the need for new applications that could provide new functions to be incorporated into the *existing* systems. Such functions were not being provided in the old system, which still exists but is now virtually dead. Parts of that system are still active and used sparingly. It will be written-off and removed from the systems once the new system comes into production.

#### **A.3.17. The Old System.**

The old system was a classical system for accounting. It was used for management reports. In that sense, it was a very traditional input, process, output, batch mode, printing plant. The new system will be a transaction processing system.

#### **A.3.18. Problems with the Old System.**

Bank 3 has already completed the designing of a customer database, which was the problem with the old system. Other problems with the old system were that there was no global concept of the entire activity of the bank, i.e., there was no building in of the new product lines that were offered by the bank throughout the world.

The second problem was that there were different sizes of systems. These were linked but on a very irregular basis. There was more manual linkage than automated linkage. Finally, it had an old approach – that of Electronic Data Processing – served very narrow and focused groups in accounting and finance.

#### **A.3.19. The New System.**

The new system will have four basic databases;

an account database,

a risk database,

a customer database, and

some statistical modules to be used as functional support for managers.

The system will also produce reports for the central bank in home country and for use in headquarters of the bank. Each of the databases mentioned above are physically different, but logically they will exist in the new database management system (DBMS) together. In other words, it will be possible to get one schema and join it with another schema, and finally, get queries or reports from different user views.

#### **Author's Comment 10:**

It may be appropriate for Bank 3 to look at the *polygen model* of CIS/TK that collects data from several sources for composition and does semantic matching to relate data logically and completely before composition.

### **A.3.20. Proactive Designing for the Future.**

The philosophy used in designing the new system is that of Entity-Relationship (ER). Peter Chen's

**ER-modeling analysis and design methodologies for database design are being used with the help of a consultant**

that was not named. The system that they are employing for the new I/T direction will be DB2, an SQL-based relational system. Hardware to be used will be IBM 3090 in the head office.

The expansion of computers in Bank 3 is also taking place from the users end, which is causing concern at the Systems. The concern is that any individual who wants to use a PC for his own desk-top work is buying it with an application package of his own choice and developing, if necessary, on its own any further applications needed to solve his or her problem.

**Sometimes there are requests coming for down-loading of data for PC, and sometimes they want to up-load to try out some of their own problems**

through the help of the central systems department.

**Author's Comment 11:**

Requests for up-loading or down-loading means that the central database has important data of relevance to different users. Full range of connectivity would ensure that such requests would be reduced to virtually none as bridges will talk to the end-users.

But in the long run, the problem will be the PCs integration with the central database that is now being designed. The expansion of PCs warrants such a development.

**A.3.21. Special Applications.**

For the large corporate customers, an application is being designed for its international cash management. It will take care of data sent to central system through networks of telecommunication, after batch processing has been done.

So, there will be some batch processing in regions and branches. The end result of the branch's batch processing will be sent via telecommunication network to the centralized computer in the head office, which is in the home city. They will then translate the accounts from all these countries through certain translation tables which they are built into the database. Finally, they can

send out information through the same network and can also respond to queries which will come through Electronic Mail (EM) from abroad on certain clients.

Thus, this is a mixture of centralization and decentralization, essentially with a time lag dependent upon when the batch processing takes place. In certain cases, with large processing branches, it may be on a daily basis or on a weekly basis, and in some cases it will be on a monthly basis. Therefore, the data will still not be 100 percent accurate as to the data at the head office database.

**Author's Comment 12:**

Will it necessarily have a complete up-to-date picture of the bank's overall accounts at that point in time? This is yet to be seen. But apparently it will not, even through this new approach. But the bank is quite open to new ideas to examine the utility of other information composition solutions.

**A.3.22. Other Services Offered.**

There is some retail and commercial banking also being done by Bank 3 because they want to keep happy some of their large investment clients who also want retail and commercial dealings from themselves.

Bank 3 also wants that certain important accounts – even if they are not in the investment part of Bank 3 – should trade with them. For such customers,

there is no standard solution. Each branch all over the world of Bank 3 has its own system, and over time

**the evolution has been very independent and there has been a lot of autonomy**

provided. There is no strategy to develop a common or standardized system, since the needs of the countries are different according to the local requirements, and standard product would as such not be implementable across the board throughout all the branches, and therefore

**it is very difficult to have a standard solution or a common solution.**

The political problems and the responsiveness of these systems would be very difficult in case a standard was thrust by the center. However, the problem in the short as well as long run is emerging in standardization of data that flows to and from head office in retail and commercial banking. Nothing has been addressed in this area. The idea is not to mess up with quasi-helpful solutions and make matters worse, but to think carefully and give it try.

#### **A.3.23. Commercial Banking.**

In commercial banking, in particular, Bank 3 has an in-house solution in the home city as one single system. It is an integrated transactional system whose architecture is the same as the home country's system. The package is running now in 10 branches and in two years it will be running on 30 branches.



#### **A.3.24. European Problems.**

There is a major problem across EC, at the local EDP departments where Bank 3 exists: Each has its own applications and solutions to the banking activities that they are involved in. Again, there is no standard solution. They have the same hardware, the same database management system, and the same data communications software.

**But their planning and solution/applications are different.**

So there is a lot of disparity and heterogeneity at the higher level, even though the physical level is similar.

#### **Author's Comment 13:**

One major problem would be the cost of development and consolidation. Can a common solution be developed at one location and implemented at all 12 or will there still be some differences that will require the reinventing of the wheel at different places? This is being investigated currently by Bank 3 and they would like to answer this problem in the next couple of months in order to begin designing their systems.

### A.3.25. Unification of EC.

As such, 1992 means more opportunities for them, but because it is more a focused bank in Europe, it does not mean more than that. The effect is on legislation and the kind of reports to be produced, which again will be done at the central location in home city and provided to the central bank there. Because there is only one product that is investment, because they have about 50 to 100 large clients, and because they have a daily running of cash management system that does capture most of these transactions with these customers on that one product, there is not going to be much of a difference as far as 1992 is concerned.

The difference will be in the home country in the declarative system for local authorities, and this will become more clear as 1992 comes near. But the architecture of Bank 3 will be able to address these demands. There is no such thing as a revolution that will be required, but more of fine tuning and some additional application building to produce their reports and answer their queries.

**Author's Comment 14:**

Production of consolidated reports will also not be possible without a composition algorithm and bridges across the systems.

### **A.3.26. International Network.**

Among the databases being designed over the past few years Bank 5 wants to consolidate on two of those databases the answers for international network. These two databases are account data and risk data. Currently these two databases are being consolidated on a monthly basis, but through a hybrid (manual-computer) system. It is not being done on real-time, but in a batch mode on-line system.

**There is no system in the bank presently which has global limits built-into it,** and yet this is an important aspect; to be able to set limits globally for transactions.

**There is also no consolidation between the data of the various branches,** and this consolidation of branches is always done at the headquarters they they get later on, after receiving information either through telecommunication network or through manual information retrieval at the head office.

The exchange of information between branches in general is very poor. By poor it means that a) it is not happening real-time, and b) the applications are being run at different places are not standardized. Therefore, the comparative worth of data cannot be evaluated exactly.

### **A.3.27. Problems Rooted in Evolution.**

The information flow between branches is virtually nonexistent. It exists between branches and head office individually. This is so because of the way these branches evolved, and the way the communication network was established.

**Communication among branches was never envisaged,**

and a centralized approach is embedded in the history which caused the current state of affairs to happen. In the future, requirement of and motion of global book for the money market activities for cross-border investment transactions, etc. will be required.

For Bank 3, there is a 50/50 business division, that is, business in home country is 50% of the entire revenues and the other 50% comes from international mode. Therefore, this bank is more an international bank in investment banking than any other home country's bank today. However, as explained above, its international network is very poor and it is looking towards a competitor's whose international network it considers superior to its own (i.e., Bank 3's).

## Interview with Systems Manager

### **A.3.28. THE Consolidation Problem.**

There is a problem of consolidation even in the home country today across all branches. There is a main database, which is the customer database. There is also a risk database and a client database. These are effectively operational, but

**they do not have all the information needed for consolidation.**

#### **Author's Comment 15:**

This clearly shows that in order for these databases to talk to each other, there is a requirement for a bridging kit that will understand the various parameters in each of these databases and link them appropriately.

The products related to the databases have different applications. Only some products are on the database, not all. The reasons for consolidation being one of the major problems of Bank 3's Systems Department and are really two :

- To save duplication. (i.e., to have less duplication of work in different databases – Bank 3 has about six databases at the end of year). Each is different.

They have about two parts for each application: a. New accounting system which is able to handle information on the activity and store this information; b. Old systems (with more of the old accounts and the old generating procedures relating to those accounts).

**Because of the different reporting demands coexisting today, both the systems have to work together.**

- Generalized restrictions. To be able to make generalized restrictions, the structures of procedures are made like no frontiers. COBOL data structures are typically used in most of the databases. The data structures are similar to an operational database. Operations have common part as well as specific parts, and through a dictionary of structures the common parts can be correlated and schemas and subschemas can be joined.

### **A.3. 29. Possibilities of Decentralization.**

The systems can be decentralized, but the structure must remain the same. Therefore, if the structure has to be standardized across the board, the decentralization would insure the data flowing among different sites has the same format, and a consolidation at a higher level is possible.

Another major problem is the data is separated out. There are too many systems, each having separate data. There is a lower level, which is most basic information like the accounts. There is no provision for higher level, and so the higher level queries are not even made to the department. The old systems plus

the six new databases are now coexisting on the systems. There is a strong need to make interfaces among them now.

#### **A.3.30. Repayment of Debts.**

Four years ago the bank started change in legal reporting of home country's payment of balance towards foreign countries. As legal declarations changed, the problem was conceived by the Systems Manager and it was to consolidate data from various areas.

He thought about new structures, about interface approach to old applications (around nine old ones were conceived), but this was only approximately done as some data was missing, even in the old system. So here another genetic problem of large files in the third generation language based systems cropped up, which is that information was missing in many places.

**This problem exists everywhere now in the old systems.**

Therefore, a query in which the old and new systems have to be integrated will have to check first the consistency of the old system, and where there are holes, it will have to make it explicitly clear. The bank is now working on a new legal accounting set of rules, as there have been changes in the past two years in the legal accounting procedure.

#### **A.3.31. Interfaces**

From the old system therefore, the bank is now running an intermediary information system which resides in the memory of a computer or as a transitory file outputted on a secondary storage and then from which finally reporting is done. So the bank is using a system similar to the one diagramed on the following page. Note carefully that there are two different systems going parallel until the convergence takes place at what is called intermediary data. It is there that merging is done and then reports are extracted out of the merged files or the merged database. It's not just a sort-merge, it is a higher level process.

#### **A.3.32. Interfacing Problems.**

There are two types of problems/challenges :

1) To reduce the beginning of process and increase the rest of processing, which means that the parallel and different branches about the sort and merge needs to be reduced to fewer and fewer steps and more attention needs to be paid to the lower ones after the merging, and more attention and productivity can be gotten out of paying attention to the reporting process and what goes into making a reporting process a success.

2) The quality of data in the old system is lower also (some approximate inputs exist there). So reporting individual data and checking it is a problem.



### **A.3.33. Strategies for Home city Accounts.**

There is no overall strategy for the entire network of Bank 3 for consolidation purposes in the format described above. In fact, it is only for Home city based account. So, in the agenda and priority of the bank is the future unification of all the networks and all the systems operating all over the world that belong to Bank 3 and relate to operations for these statutory requirements. Because the current statutory requirements vary from region to region and country to country, therefore their own systems take care of those requirements.

There is another strategy, a better one, which is being considered by Bank 3. If there is a two way flow at point A, which passes information in both directions from folders to transactions and from transactions to operations and vice versa, and that there are possibilities of secondary flows from operations. And there can also be an input to the operations from the old system with an interface designed specifically for this purpose. It is here, at this interface, that CISL Tool Kit type of approach would be required to mesh together the ongoing online operations with the old system transactions that are being captured in the systems designed before the six databases were introduced a couple of years ago.

This new strategic structure has synchronous alignment with the six vertical applications of the bank. So it sounds like a very viable option. The strategies therefore would be:

- 1) to rewrite the old systems in the new formats, and this means a lot of time.

2) make interfaces which will enter in the system not only the outstanding trail of operations shown by dotted line on the diagram, but will also capture all the other transactions that reflect the operations of the bank.

When this interface will be made, it will have lesser secondary flows and management of the system will be based on the architecture.

The bank is now investigating the systems that can do this kind of work. For us at CISL, it means that the bank is already facing some of the symptoms and looking into problem solutions the way we are in part working on CISL TK, which is to provide the interface to reduce the drudgery of matching the old and the new systems and to reduce the secondary flows and to insure that the reporting process is complete, accurate and timely.

Bank 3 is feeling difficulty, but not so pressing right now, in this duality of mode that they desire, i.e., centralization versus decentralization. This problem is fast approaching. They are yet not thinking about global reporting, but are quite aware of problems at the local level. They are presently thinking for themselves in terms of accounting entries only.

They want to have an "Info Center" type of concept instituted in the bank. Accounting entries is just not everything. They have to improve in their architecture to integrate all applications, and they will need a great degree of economy to do that.

People are not asking for autonomy in general. They know that production of accounting entry is an essential part of their daily routine and can see some working being done on paper on a daily basis. But eventually this

problem will have to be attacked because a higher level policy will be required to monitor this kind of unification across various borders and regions.

Bank 3 has two strategies. First is to centralize, i.e., to develop new applications in Home city and have all the accounts maintained there. The second would be to have local development take place. This will be highly autonomous. It is in fact beginning to see some autonomy taking place in that the a famous vendor's database with the Info-Center concept is gradually emerging as various regions are getting access to this database management system.

The bank is also trying to make analytical accounting, which means have management accounting, costs and budgets, etc., put on the computers. In this way, a kind of executive support system would also reside on the centralized database for top management to be able to make decisions, and in fact, even pass them down for examination purposes at the bottom level of the organization, where the costs and budgets, etc., emanate from.

There is a second major problem. That is of internal budgets. Like any other IT department, this is acting as a constraint in the procurement of the right kind of technology, and the department has to act within those constraints. Maintenance, housekeeping, new developments, secondary flow generators, etc., all depend upon these budgets. Compared to the other investment banks and other investment (inaudible) of universal banks, Bank 3 seems to be the most aggressive of those that I visited and interviewed in trying to meet the challenges of centralization versus decentralization, of composing of information, of

coexisting of systems, etc., and had a reasonable amount of budget, but not as large as the other banks did for their information technology divisions.

The secondary flow generators are, for example, account entry generators, account per files (describing how to generate accounting entry processes, generate effectively according to description of profiles), calculations of profiles and parameters (to call any algorithm, this generation tells which one to call). The bank has generators all over in the business areas and the functions. The local modules are also generated this way. Their activities and (inaudible) of the accounting of operations and transactions that are standard to the practice of investment banking. The following two pages show the operations management system and its current requirements for the co-database.

## A.4. BANK 4

### Interview with Director for Central Administration and Finance

#### A.4.1. Background.

Bank 4 is a major investment bank in its home country. It attempts at providing 'tailor-made solutions' to its clients. Thus, it is one of the two leading specialized investment banks in a sub-region of Europe. It prides itself in managing risk well and meeting the portfolio demands of its customers.

The Central Administration Department has, over the last few years, developed an inwards focus regarding systems and organization. Bank 4 is not as large as the largest commercial banks in Europe. Its throughput is obviously not as high as in commercial banking. Its product is mostly investment banking. Executives in Bank 4 believe that

**training and development internally would improve its efficiency**

before introducing sophisticated systems of the highest order even if they can be afforded by the bank.

**Author's Comment 1:**

It is usually better to begin on a clean slate (i.e. a fresh start) as in the case of Bank 4 than to tidy-up and assimilate heterogeneities that evolved over time. If the human resource focus is present, it greatly facilitates in the learning curve for adapting to latest technology.

**A.4.2. Systems Division.**

The Systems Division of Bank 4 falls under the Central Administration Directorate. The Director who heads this is a business specialist in Finance. He has extensive experience in bond business; selling, trading, evaluating risk, etc. and has written comprehensive manuals on the risks, their types, and managing in the bond market. These manuals are now being used throughout Bank 4.

It is believed at the Directorate level that 'nine-tenths' of all problems in the Systems Division are not as yet technical problems requiring solutions based on the *latest* Database Management Systems (DBMS). Instead, they are people-related problems. They formulate human resource development challenges.

**A.4.3. Evolution of Current State.**

The gradual promotions of employees who started as Assembly-language programmers have now placed them in important positions in the Systems

Division. While their efforts and contributions are noteworthy, they are not necessarily able and/or willing to quickly change over to new Information Technologies (I/Ts). So, this is one of the major problems;

**lack of future vision with regard to I/T and benefits possible through its prudent deployment is at the center of all corporate diagnoses.**

It is not realistic to thrust forward with a new technology without understanding it and developing a consistent direction with it. The quality of system being bought or employed for solving a problem depends upon the quality of human resource development undertaken by the bank prior to and parallel with the procurement of the technology.

#### **A.4.4. Decentralization.**

Departmental computing is decentralized. It is based on Personal Computers (PCs). Currently, Bank 4 is trying to train their executives on the effective usage of PCs with various software vendor products for office automation. They have begun with showing improvements in the business efficiencies by using PCs for evaluating risks of various projects and investments.

#### **A.4.5. First Signs of Heterogeneity.**

Problems are beginning to arise when various projects and investments, having been studied by different people/departments, need to be centralized and compared. In other words, when risks have to be matched for different projects of the clientele throughout Bank 4 departments.

**That is where we believe that standardization is required as a solution.**

**Author's Comment 2:**

Standardization in a small section of a company, for a short time period, and for a narrowly-defined function/product may be feasible *but* it may not necessarily pass the test when rapid growth takes place and/or qualitative changes occur in the environment and competition.

Executives in Bank 4 believe that standard tools used with the many PCs will solve majority of their problems of communication linkage among these micro-computers. They are working on a Local Area Network (LAN) from a famous vendor to establish uniform protocols and achieve handshakes across systems.

**Author's Comment 3:**

Merely establishing handshake through hard-wiring all systems can only provide for physical connectivity. Logical and organizational connectivities still need to be catered for, and carefully so, in order to make sense regarding the data flowing across systems. In matching different projects, clients, and portfolios, it will be necessary to use *semantic reconciliation* as without it, integrity of



information may not be guaranteed. This will be more true when the bank grows and there are exponential pressures on the system to grow accordingly.

#### **A.4.6. Stress on Cost Advantage.**

A single standard seems an attractive solution to Bank 4 because they believe that

**training costs would be substantially reduced through standardization**

and things will remain simple. The objective is not necessarily to communicate for the sake of it, but to first establish what is it that needs to be communicated across systems and then engineering data likewise to facilitate such flow on a regular basis. This implies setting up standard data that can be effectively transferred through the vendor's LAN protocols.

#### **Author's Comment 4:**

Again, this may work locally <sup>1</sup> on LANs. As geographical coverage grows, WANs and even telecommunications-based data flow may become essential. Then, higher-order connectivities become *mandatory*. It is better to begin now planning for such a scenario if Bank 4 wishes to become a niche FSI in the twelve European Communities.

---

<sup>1</sup> LAN stresses LOCAL networking. With growing physical spans, one needs to get into WANs (Wide Area Networks) and Nodes.

The consolidation problem at Bank 4 has yet not become apparent or even a major bottleneck, because the top management is still not very sophisticated – it still does not use computers that often. Also, as mentioned before, the throughput is not very heavy.

What is presently needed by the senior management on a regular basis are three types of information. First, are the accounts based on how much value has been added by the accounts to the bank and by the bank uniquely to its accounts. Second, the bank's exposure to interest rate change, i.e., the interest-rate risk. Finally, the liquidity position of the bank.

#### **A.4.7. Lukewarm Plans for 1992.**

As far as 1992 is concerned, Bank 4 believes that they are capable of buying small banks – should such targets be available – but they are not extremely enthusiastic about it. Offerings of other banks at the price acceptable to Bank 4 have not come yet.

#### **Author's Comment 5:**

Should Bank 4 acquire, what will become of its currently propagated standard? It will need to replace the acquired bank's system or its own? How will data reconciliation take place in the data-centers? It is important that the nature and future potential of heterogeneous systems be realized now rather than later.

Bank 4 is more interested in market penetration rather than expansion. They believe that this way, they will maintain a marketing focus on a niche segment, will keep things simple in its administration of activities, and will have more time for developing themselves internally.

At the same time, Bank 4 fears that because it is not as large as commercial banks in Europe – as deregulation on products and geographies is well under way – they might themselves be acquired instead of their initiating any mergers or acquisitions with banks smaller than themselves.

The human side of issues that Bank 4 has set out to address are based on standard methods and technology tools that do not make it difficult to access files and monitor activity through such an architecture. Also, it believes that

**training human side will make the bank more alert and different in service.**

**Author's Comment 6:**

Information technology today provides value-adding in service activities. It also enables better placement in a competitive position in a fusing industry like the emerging European FSI. If Bank 4 establishes a vision based on I/T, it can soon get into a leadership position rather than an ambivalent one.

#### **A.4.8. Plan for Good Systems Development.**

The systems expertise in Bank 4 needs to be developed in abstract reasoning to fully comprehend organizational problems and requests from several departments and areas. Currently, they are addressing the problem of fully handling the technical implementations of PC-based indexed files to see the whole system in a logical consistent manner.

Another problem being addressed is technical staff equilibrium, i.e., maintenance versus development balance. Maintenance does not require heavy intellectual demands or new technological feats. So, that is going on all right.

**But new development is not taking place, at least the way it should.**

In particular, the bank desires to build bridges between files to extend the usage of its LANs.

**What executives are really look for is information, but what systems people  
actually look for is processing**

and churning (data). Processing by itself may not be the real thing.

#### **A.4.9. Envisioned Growth in Europe.**

Bank 4 is also growing in business every day. In the last couple of months,

Bank 4 is also growing in business every day. In the last couple of months, **the bank has started putting its accounts together and is now beginning to feel a need for meta-data and structure as basis for [a heterogeneous] system.**

The Chief Executive Officer and the Senior Executives currently work through a manual indexing system of around 50 indexes which provide information about the branch network. Once this index is used on a PC, it provides quick answers to most query-types. But the problem is that

**the nature of data is changing now**

and also growing in size by volumes in the EC region. As the customers are growing in number (and moving across the region more freely), the risk is also growing correspondingly.

In the past, there used to be one custodian (or one baron, if you will) who managed everything, and kept the risks small to save his head. Now, with growing complexity, growing trade, and expanding product demand, the risk is increasing fast and this needs to be always kept under control. As mentioned before, risk-control/minimization is one of the most important objectives for the future and will determine the kind of system that will evolve in Bank 4 by 1992.

An anomalous situation in the organization of Bank 4 I/T is that centralization is difficult. This is being strongly realized now. In the different buildings and offices of the bank, they have different main-frames *besides* the

PCs connected through another vendor's architecture. This is already causing the problems to heterogeneities. Therefore, they

**have also not made a deliberate effort to decentralize.**

So, not having decentralized by default while also not being able to centralize, has caused a situation where I/T is currently stalling. However, the bank views itself in a reasonably good situation because – to them – there is not much complexity in their systems, having only a single product and a niche market.

Per sé, 1992 is not so much Pan-Europe or a very big opportunity for Bank 4 as much as the possibilities of mergers and acquisitions are to them. Additionally, the bank is closely scrutinizing the deregulation and the corresponding new statutory requirements that will surface out by 1992. These may result, in turn, to producing more (or different types of reports) from their systems for consumption by CEC in Brussels and government in home country.

#### **A.4.10. Relation to Competitive Developments.**

There will be another strong outcome for Bank 4 in 1992. It relates to external conditions; a comparative evaluation of competition in one type of investment versus another type. The bank will need the systems to provide authentic information about how much competition has been gained (or how much has been lost) and what investment types have persisted.

**Author's Comment 7:**

The bank's current systems agenda (see Sections A.4.4. and A.4.9), is not a very long-focused one. Rather, it is geared to short- and medium-term.

**A.4.11. Short- and Medium-Term Plans.**

As stated above, the objectives in Bank 4 are completely tilted towards human orientation with hardly any innovative technology direction. They have set themselves specific goals for the next few years.

First, they want to

**demystify computing**

and make people more computer literate. The stress will be, for example, that the Treasurer should know how to use Lotus-1-2-3™ or DBase-III® Office Automation (OA) packages, etc.

Second, there will be

**more physical installations of PCs**

– but not any specialized DBMS-integration tools. Rapid dissemination of PCs and versatile tools like Lotus-1-2-3™ would be employed as extensively as time and training will make possible.

This is a good 'support' philosophy (as in the yesteryears of American corporations who had slogans like, "Every manager with a desk-top computer"). But there is a need for technological direction which will be so supported.

Third, in order to link the computer systems – *for up-loading and down-loading purposes only* –

**the bank will maintain the two extremes of computerization.**

One is a large mainframe in the head office. The other extreme is a network of PCs in another office. In the mid-range, they do not have any minicomputer. Nor do they have any nodal networks between the PCs and the main-frames. Therefore, there is no intermediary processing or 'data buffering.'

The bank is now looking into introducing minicomputers as well in the next couple of years or so, whenever they feel that training is sufficient, fresh systems personnel have been hired, and genuine threshold/load requirements warrant medium-sized machines.



**Author's Comment 8:**

Adding mini-computers later as 'load-bearers' may not solve the problem. It may be then required to balance load on a main-frame to workstations mode. Deliberately adding a new kind of machine may take away the decentralization as well as standardization objectives of the bank. In case a *hybridized* approach is desired, it may be better to work out detailed scenarios of the heterogeneities that will invariably evolve and then work backwards at all levels of connectivities.

Fourth,

**the nature of training will also change.**

I/T people will be trained more about business problems, business logic, and strategic value of information at various levels. This will enlighten and prepare them for better systems analysis and design, rather than providing them with sophisticated technology that they will start using to code in Assembly language syntax.

Fifth, the career of I/T people will strongly support

**a shift in emphasis from maintenance towards development.**

As the bank cannot lay-off, (i.e., the hire-and-fire rule can not apply owing to local regulations), Bank 4 usually sub-contracts software development to outside firms. This also helps balancing the fluctuation of personnel in the I/T department, its demography, and morale.

Sixth, some

**foreign network will possibly be linked to for trading stock,**

not bonds but stock. The bank is restructuring its trading room within the next 15 months. It will become fully electronic by that time, and there will be balance sheet computing of risk within the next 15 months, by the Treasury.

Seventh, risk management. They will

**define and elaborate system of risks and limits,**

because bond trading means large amounts in very young hands that are inexperienced and can make terrible mistakes. As mentioned before, all types of risks have been studied by the bank and documented with the help of the Directorate, who enjoys the distinction of being the author of those volumes. There will be thus a delegation of responsibilities based on the risk structure developed for the bank. They believe that

**credit risk is also important and that is the only type of risk that they have not fully studied yet.**

They will finish its study off in the next couple of months.

Eighth, branch network. It is hoped that by consciously educating branch managers on why certain information is important, it will be possible to

**get the right kind of information from branch managers**

once they go into the branches. Instead of producing details, they would like to have broad overviews, so stress will gradually be placed on *composed* and consolidated information rather than primary or atomic data residing at various nodes.

#### **A.4.12. Special Development Department.**

The bank has opened a special development department under the Systems Division. Normally, it had two divisions; one for operations, which used to run the systems, and the other for development, which used to develop (future) applications. Owing to the broad agenda highlighted in Section A.4.12, the bank has set up a new department called Special Development Department that will look into the possibilities of developing software to be used at *all levels* of the bank. It will address such needs as are special, i.e., not conventional in nature.

Interview with Director Information Systems Development  
(Special Development Department)

**A.4.13. Competitor's Technology Threat.**

An interesting fact surfaced with the author's discussions with the Director of Information Systems Development. He mentioned that there is a commercially available package (developed by a specialist systems consulting firm) that was being used by a competitor bank for international branches and communication among them. He did not have the details regarding the package's working (i.e., consolidating among international networks and branches), but that it was being done.

**This was creating a lot of pressure on Bank 4 to develop new technology.**

Bank 4 has developed a proprietary database, which

1. Binds and consolidates information on all clients, and accounts, *but* on a homogeneous system platform.
2. Is currently used on a trial basis for prospecting only and therefore, is a support to the marketing department in finding out where possible transactions can be made and what clients need to be contacted for possibly procuring additional business.

#### **A.4.14. Present Concentration.**

The department is beginning to separating its newly developed database from its old database. The new DBMS can be operated with some of the old systems, *but not all*, even on the same hardware and operating platforms.

#### **Author's Comment 9:**

There is a clear need for logical connectivity in connecting the two databases. Even if the old one will be gradually peeled off, it should be tried through a tool like CIS/TK.

Currently, the Special Development Department is developing its proprietary DBMS in a way that all systems can be connected to it. Bank 4 wants to project and use its own system instead of a standard DBMS from a vendor.

But this internal DBMS is not usable on all systems at present. There is a separation between the systems used for capital markets and systems used for all other products. Therefore,

**consolidation on counter-parties is not done.**

In the retail market, consolidation at bank level for clients is being done, but not for capital market system and also not for corporate levels. This is a big problem.

The major hindrance is that different branches of the bank do not have the same hardware platform provided them yet. There is no linking done with such branches yet.

Some regional level banking could be done through this configuration to the advantage of Bank 4. But there will be some regions that do not exist in local databases, but in order to consolidate information for the large clients at the local level, even these branches need to be included.

There will be some form of decentralization this way. There are other banks affiliated to Bank 4, but

**there is no consolidation of common service.**

**Author's Comment 10:**

Clearly, the bank can take advantage by designing strategic connectivity and organizational connectivity into its new, proprietary DBMS, allowing for the hybridization.

#### **A.4.15. Impending Heterogeneities.**

As yet, clients of Bank 4 do not perceive in terms of consolidated data, due to the different banks that hold their portfolios but after 1992, they may demand such higher quality information.

A major problem that will arise in the near future is that there are other banks owned by Bank 4, and these other banks also do the same trading as Bank 4. As a holding company, Bank 4 will need – at some time in the future – to consolidate its branches *with* the subsidiaries. This will take two to three years. Again,

**the stress will be on standardization,**

which means developing a common system for all banks, i.e., the Bank 4 as well as its subsidiaries (other wholly owned banks). All this will apply to systems in home country.

As yet,

**at the international level, the bank is not sure what to do.**

It is dubious and still investigating. However, it is not very disturbed about such a situation because Bank 4 is not doing much computing abroad anyway.

**Author's Comment 11:**

Again, the conflict between which standard to choose and how far will standardization fend the bank's goals to harmonize across EC, will cause a lot of confusion and may result in anomalous I/T strategies. It may be useful to sit with the CEC Directorate to evolve an *industrial standard* that can be a backbone for the entire region.

Presently, Bank 4 is using the SWIFT network for messaging about the securities transactions. Therefore, all securities movements and all related transactions are reported through SWIFT, being captured at the head office. Also SWIFT is used to communicate with other banks, serving as an excellent international medium of exchanging *final* information on money movement.

**Author's Comment 12:**

There was a serious disparity noted by the author. There were some I/T specialists working directly under the Director General, Financial Banking. These professionals were employed in retail banking but were typically stationed in the trading rooms. **The standards *they* were using had nothing to do with the standards in the rest of the company, i.e., in the main Computer Department.** Additionally, the Director for Capital Markets also had his own small team of I/T professionals. They buy or build packages for the trading room and are



developing systems for swaps. As an example, two packages were recommended. One for options pricing. The other for bonds processing. These were done through the recommendation of DCM – not the Systems Division. So, there is **already a disparity of the way in which systems are designed and utilized** while the Systems Division itself is trying to develop standardization for the bank as a whole.

The situation is similar to

**the bank's having different I/T islands**

or I/T departmental islands. Retail banking, financial banking, and System Division – three of them at least, are separate islands already. There are also

**major differences in platforms, standards, languages, and operating systems that will not make a consolidation of systems easily attainable,**

at least not in the near future. There are transfers of files taking place at the physical level with the Central System Division. Upon receiving operating results, consolidation is not done at the logical level, but the data received takes about half a day to travel on the lines, then is reproduced again.

Typically, a query from the top management

**takes two to three days now for consolidating information**

even if all data has been identified at various locations. It may take less time if all data were at one location or derivable at one point, typically the Systems Division. Additionally,

**accounting level consolidation takes place but with a time gap of six months**

or one year when the Annual Reports are due.

The problem arises in matching the client numbers, errors in naming, and corrections of accounts. Then, the bank needs to employ sophisticated routines that would do checking of sorts. The bank is considering setting up a data center which will 'grow outwards' from the head office.

## A.5. BANK 5

### Background Interview with Special Assistant to the President

Bank 5 is one of the largest European banks. It had taken bold steps to capitalize on the 1992 directives. In fact, its management has long been planning on an overall globalization strategy for itself. Owing to Bank 5's strategy, the changes that had recently taken place in its structure, and the need for its I/T to come up with appropriate solutions to meet the challenges it has set itself for meeting, the author met five executives of Bank 5 at various levels and in different locations. Results of the interviews are reproduced below. Repetitions are removed so that a continuous reading of A.5 provides meaningful information.

#### A.5.1. Background.

Bank 5 has recently merged with another home country bank. The merger seems to be forging ahead smoothly but the systems of the two different banks have not fully coalesced in the back offices. The main objective of this merger was to get economies of scale, and some economies of scope. Spin-off benefits are also expected. For example, from a lower individual relative ranking of each of the two among the banks of Europe, they are together among the largest. This will bring tremendous marketing-image and industrial-goodwill benefits.

**Author's Comment 1:**

While planning and evaluating the merger, the two banks saw the *business advantages* (typically, marketing and economic gains) and did not specifically investigate I/T standing and differences. This was primarily due to the fact that both's having the *same hardware vendor* caused them to think that there will be no connectivity problems.

**A.5.2. Connectivity Perception among Executives.**

At the top level, it is assumed that systems are not necessarily difficult to connect because platforms are similar for both the banks, i.e., one international vendor.

**The feeling at the top is that technical connectivity should be sufficient** because the platforms are the same, but they are now realizing that this is not necessarily a specialist's reading as well. The bank also has the same network architecture, but existing at only a few locations. At the logical, organizational, and strategic levels,

**there has not been any such study done regarding the homogeneity and  
connectibility of the two systems**

of the merged banks.

The challenge seen by the highest levels is that of integrating applications software to complement the systems of the two banks. The bottom-line feeling is that the hardware vendor – being a highly reputed one internationally – will connect systems and such a physical connectivity itself will do everything.

**Author's Comment 2:**

There is no hardware vendor as of today who has successfully integrated an on-line, real-time system with two types of databases across twelve countries of different cultural practices while also enabling all four levels of connectivity.

Inside home country, Bank 5 has all its branches connected on Bank 5's own network. The central computer center, about 20 miles away from home city, is located in the basement of a big building. It houses the mainframe systems *and* a backup system (switchable if the mainframe fails for any reason).

**A.5.3. Current Practice.**

All transactions are updated on-line, but not real-time *but* in real-time is the future objective of the bank. There is a few hours delay in the actual updating of this on-line system.

**No study has been done on the cost of information delay,**

but the President's office thinks that it might be interesting at some time to work out the economics of how much the delay is costing.

Current priority is to *have* the two bank systems integrated *somehow* – not to work out on these costs (of what is not happening), but to actually take care of the system synergies.

Only one of these two merged banks uses Electronic Mail (EM) extensively. In this bank, there is more communication among officers since it was installed one year ago as an effort to bring in Office Automation (OA) into this bank. A study was done on EM's usage which shows that

**executives are using EM, and its use is increasing every day.**

In fact, at the top level of this bank, it is becoming a standard for daily communications among the Directors, Executive Officers, and Managers in the home city. There is some communication with few nearby cities also. The study reported that at least one-fourths of all employees used EM at least once a day. It is not that the other three-fourths did not want to use it but that Personal Computers (PCs) or workstations were not provided to all of them till then. The estimate is that roughly one-half of those who have PCs or workstations are using EM.

**Author's Comment 3:**

The culture in the other bank that has merged to form Bank 5 does not use EM and is not sure about its utility. There will be a major cultural disparity between these merging components – this cultural difference being created due to different technological levels of the two components. Such a difference can further propagate 'inferior-superior' states.

**A.5.4. Proliferation of I/T.**

At the broadest level, Bank 5 is thinking of providing a PC or workstation to all the managers and officers of the company, and of extending the EM facility to them. Another step in EM is the setting up of all branches of Bank 5 on EM. A pilot project has, in fact, already begun. The average employee today exchanges about five messages per day, and about every employee, uses it at least once a day.

Study has not yet been undertaken regarding standards for system inter-connectivity among all the systems in the bank. However, the possibility of up-loading or down-loading data from these computers will be investigated at some later point, at which time inter-connectivity establishment will also be studied.

**A.5.5. Organization of Bank 5:**

Bank 5 has eight Directorates, the largest of which is Administration whose chief is also the Director General for Systems. An interview with him is reported on Page A5-\*\*\*\*\*.

One component of Bank 5 was encouraging decentralization of the development of computer systems but last year,

**because of the merger, this decentralization effort has been put aside.**

Now,

**in fact Bank 5 as a merged bank is trying to centralize.**

The two components' Directorates meet every week, and one of the priorities in these meetings is the consolidation of their development work in the systems departments. The effort is

**to neither build individual empires nor begin decentralizing**

in one fashion or another, but to assess each other's technological capabilities first, then coalesce a single system that will be useful for both the banks from end of next banking year.

There is one standard database used throughout a component of the bank. It has around five- to six-hundred users who use this database facility. The other



component of Bank 5 uses another database as a standard and also uses flat-file structures. Therefore,

**it is yet to be seen whether their database files could be integrated.**

If integration proceeds, it is not known how the duplication of customers and the redundancy of other data will be removed.

**Author's Comment 4:**

With two different databases – clearly several users of each of them – there will arise a problem of logical connectivity between them. As the bank stresses on consolidation on a real-time basis in the EC region, there will be an impending need for organizational connectivity as well.

**A.5.6. Choosing a Standard System.**

At the top level, one feeling in Bank 5 is that one of the two components is the bigger in terms of capital and in terms of number of branches all over the world (in hundreds) as well as in home country (in thousands). So, its standard should become Bank 5's standard. The other component has the largest capital base in home country and therefore has a powerful base, making it appropriate to use its system standards.

The cultural and historical roots in other countries of the first component are as old as 1700s, particularly in home country and its colonies. The other component has fewer than a hundred branches abroad and so has lesser experience in regionalizing/globalizing. Similarly, its systems are also somewhat *behind* the first component's.

Bank 5's vision is that home country being a relatively small territory,

**home base will not be the only area to base strategy on.**

They would like to become a *global player*, and become strong enough to be impacting around the globe.

**Author's Comment 5:**

Bank 5 is different in formulating a strategy for not just its own country and becoming small in size and scope in proportion to the size of its country in Europe, but to become competitive and advance in the industry of banking globally.

The prediction of Bank 5's officials is that other banks in home country will be beaten by this merger of the two components and that there will be sufficient strength among them to move forward in competing at the global level.

### A.5.7. Plans for 1992.

By 1992, Bank 5 hopes to establish an unmatched, solid base in home country. It would begin consolidating its expansion abroad with initial stress on EC12 but also using the former colonial locations to get profits and acquire monetary strength.

After the merger is complete – which hopefully will be the end of 1990 – logically, Bank 5 will be among the top ten banks in Europe and among the top twenty in the world. Consolidation in Europe as a strong region will be given precedence; the goal will be to act parallel to (and if possible, stronger than) the other leading British, French, and German banks. Then, expand to other countries like South America and Asia where business is growing and develop strong positions there.

In general, the bank executives have no problems with the merger since the bank wants to become a global player in a wide range of financial services and this is clear to both components at all levels. In fact, the executives want it to become a universal bank dealing in all financial activities; commercial, holiday, insurance, investment, options, retail, swaps, wholesale, etc. All these products were discussed prior to this merger.

#### Author's Comment 6:

With such a universality of product-offering and services in several sub-regions within EC, there is a need to understand *composition* issues at all levels.

Priority is on finding out where the duplication of accounts exist – particularly the large ones – many of these can now be identified manually (and easily), and then to give them the incentives of consolidating their accounts and of making portfolios for them. This will begin very soon. When the merger is complete in the economic and legal sense, work on this priority will begin.

The second priority is to

**start looking at the computer synergies.**

After merger is complete, the bank will investigate in depth as to how the systems of the two components will work together. Issues that will invariably arise will be: which system will be used, how will differences be reconciled, what connectivities will need be built in to the overall system, etc.

**Author's Comment 7:**

Issues postponed to post-merger situation are really the ones that need to be addressed prior to the merger – in fact, back-office technology synergy needs a detailed look and specific areas need be identified where *harmonization* work is required. At the regional level, both, cooperation among industry members and CEC needs to be worked out.

#### **A.5.8. Cost Concerns and Major Problems.**

The most pressing problem today relates to

**cost of operation, which is rising**

because of Bank 5's growth. At the same time, the cost of automation is also high. The cost/benefit ratio should be more in favor of benefits, and therefore, has to be exploited immediately. Then, these costs have to be amicably distributed/fused between the two components. Remember that the main reason for the merger was to share the benefits of economies of scope and scale, i.e. lower costs and share them judiciously.

The second major problem felt at the Directorates is that,

**after the merger is complete, they will need less people in the branches**

and in the bank as a whole. There are over fifteen thousand people in the branches.

With a project for the automation of these branches (initially through PCs and ATMs) in at least 250 of the branches in home country – using the standard vendor equipment – there will be less requirement of manual work. So, another focus will be in trying to reduce people where necessary and to reduce their redundancy.

The third issue is that Bank 5 feels the need for an Executive Information System (EIS). A study was done for the Directorate on how to use the existing standard Database Management System (DBMS) to support a front-end EIS. An EIS would be internally used by the Secretariat and the Directors to get consolidated information from the branches and other MISs in the company. The executives will be supplied with EIS on the PCs. So, another important focus is

**to modernize the decision making process through a support system based on existing computer infrastructure.**

The bank may implement an EIS using a report submitted by consultants.

**Author's Comment 8:**

Clearly, Bank 5 is envisioning itself in a higher-order computing environment with both, internal and external foci. It is an I/T (and not MIS) scope that the bank is desiring. I/T and people-related problems are different than MIS. One can not simply layoff, in fact, may need to train the 'extra' people in other related jobs.

## Interview with The Secretary General, Merger Secretariat

### A.5.9. Merger Secretariat.

The merger Secretary-General has a finance and law background and has put in eight years in to planning and control with one of the two merging components of Bank 5. His foci have been designing strategic plans for organization, dealing with management consultants, and coordinating overall strategies. From the beginning of 1990, he has been designated as the Secretary General of the merger, a position in which he actively started working since beginning of the second quarter, 1990.

### A.5.10. Merger Perspective.

The merger and its fast follow-up has two propelling reasons for the two components that have now become Bank 5:

- **To become a global player**
- **To gain cost advantages**

Both the components had the idea that they were not *individually* great enough to independently develop themselves on an international scale to

**become a global player in every important center of banking in the world.**

This implies head-on competition in Europe, Far East, South America, and the U.S. Both needed a large enough activity and a large enough base if the dream of becoming global players were to be seriously realized.

The internal benefit to each component would be economies of scale and scope. So, they supplemented strengths and completed weaknesses. One component had a great international network, including also activity in the U.S., respectable presence in several European and Afro-Asian countries, and literally billions of U.S. dollar transactions. Its international network is not a new phenomenon – it has evolved over many years, thereby giving it good exposure to different cultural practices.

The other component had a heavy capital and asset base as well as strong home-country contacts and position. It had branches in many locations that the other component did not have and it had very important accounts that were important competition for the first component.

Bank 5 wanted to have a threshold activity level and cost-efficiencies. Additionally,

**in order to acquire a quality reputation, one needs to be spread out and *visible* all over the market – not just in home country.**

Operations in home country also having a large network and regional network on cost efficiency basis.



**Author's Comment 9:**

To build quality image alongside quantity image, one needs to embed technology in major service functions. This enhances the throughput and meets the increased demand once good image is established – else, the image is lost too soon.

**Author's Comment 10:**

In the financial services industry, today more than ever before, greatest emphasis is on *timely* delivery of quality service. With the large number of accounts (and products) that an FSI typically handles, the **speed, accuracy, and composition** are the bottlenecks if I/T is not exploited fully. Bank 5 needs to re-evaluate a composition-based scenario for its future strategy and try to implement technology that will support such a scenario.

**A.5.11. Other Alliances?**

There is a general strategy, but not specific plans yet for additional mergers. The overall strategy is to become a global player, with main activities in home country and Europe (and significant presence in other important countries).

Bank 5 will keep looking for interesting offerings that might become available in the Financial Services Industry.

Bank 5 will not go into strategic alliance other than mergers because that may cause greater management problem of integrating. They only may take over additional banks in the future if everything works well with the existing merger.

**The first priority is to make the current merger complete and successful.**

**Author's Comment 11:**

It is clear that Bank 5 is not thinking in terms of developing strategic connectivity for with its development, it could be possible to enter into other types of alliances, like joint ventures, etc.

The settling period is estimated to be three years from now. It will take that much time, as Bank 5 now realistically evaluates, for the completion of the existing merger.

**Most effort – as unanticipated – will be focused on integration of the systems of Bank 5's two merged components.**

The effort will be to develop a new architecture. A new timetable of systems integration in the home country branches is being planned. Planning for global

integration of systems will be worked on next year when things become more settled and directions become clear.

Besides geographical expansion, product universalization is also an important objective for the future. In general, corporate customers give lower returns return. Middle markets give much better return. So, Bank 5 is

**beginning to focus on the middle markets very actively now – this will require sophisticated systems and technology integration**

for the future. This explains why Bank 5 wants to be present everywhere in Europe (the world?) so that it can be a middle bank.

**Author's Comment 12:**

Contrary to a previous observation by the executives, it seems that for such roles as middle banks perform, strategic connectivity will be required by Bank 5, after all, in order to share information at the industry level and to deliver more competitive terms, better quality, etc. Building an industry system for itself may be prohibitively expensive. Some form of connectivity and standards at the *EC-regional industry-level* need to be worked out in detail.

**A.5.12. Merger Problems Witnessed.**

The bank is facing five problems as seen from the Merger Secretariat's perspective.

First, the most important benefit envisaged in the merger was reduction of costs. Given the home country' labor laws, it is not possible to reduce the labor force immediately. There is always a guarantee to labor for jobs. Therefore, the

**needs to shift people around.**

It anticipates that as the elder people retire and are not replaced, this problem will partially be settled. But where redundancy is the greatest, the bank is moving people from that place to another location.

Second, there is an unsettling phase now that must be well-managed to handle the confusion from the time of announcement of the merger to its actual realization.

**Until harmonization has occurred, the merger will not really be complete**

in every way. There is a clear problem of systems synergies. Until these are addressed fully, the merger will not be a full marriage.

Third, clients see things differently. They are not fully appreciating the merger and its effects. There are some planning problems in Bank 5 about the phases. These are very confidential, and cannot be told out to the customers.

**Customers have to face such a confusing situation while the systems are being merged together.**

Fourth,

**the biggest problem foreseen is that of integration of systems,**

i.e., synergies between the two different systems. Bank 5 is groping with the evaluation of automation, considerations for the choice of a system, unification of architectures, and the question of what to do with the existing systems of the two components.

An important set of questions regarding the two systems are:

**Which of the two systems to keep and which one not? Why? How?**

Possibilities of merger between the two systems is also being considered.

**Author's Comment 13:**

In either case, heterogeneities will need resolving. If a single system is maintained, bridges to the other system need to be built without loss in performance. If both have to be fused somehow, logical and organizational connectivities will be of paramount importance.

In case that both the systems are dropped and a new system is developed from scratch, the question of how to undertake that development and how quickly will it be achieved will be the most important consideration. The choice of beginning afresh does not exist at the moment, but may come back to haunt them in the near future.

**Author's Comment 14:**

In case of fresh development, a pro-active approach (like that of Entity-Relationship modeling) may become useful, rather than using any of the previous two tools.

So far, it has been a charming affair because they have been working on the legal merger – not on the systems merger – therefore, the system problem will soon face them. A detailed study had been done with the help of a consulting company specializing in post-merger synergies but has not been used.

Fifth, consolidation. In the Phase I of merger after August, the aim will be to gain control over the business systems. The ideal thing would be to set up a primary MIS. There will be a problem of harmonizing information out of both banks at the same time, on same basis.

**Both banks have accounts for domestic branches, but these accounts differ lot**

as well as the procedures differ a lot. There will be two different reports that will be reach the Board. This will be confusing.

**Author's Comment 15:**

This is a typical case of polygen data model (of Composite Information Systems Laboratory) where more than one source feeds in data related to the same logical entity.

It is still not clear whether Bank 5 will design a new program to accept all this data and compose a consolidated report, or whether – at the systems level – there will be an integration. Two reports will cause more confusion rather than helping the Board.

At the client level, when Bank 5 will have to give one consolidated report at year-end, according to the law in home country, interesting things could be witnessed from end of 1990 onwards. The Merger Secretary said that they were lucky that, due to similar reporting types and same laws in country of merger, the banking stage legal merger presented no problems.

A strategic plan, whereby they can use larger component's current DBMS – organized on accounts and not on clients – for every area important for

provision of account information may be used because that DBMS stores atomic data from every branch in every location. The scope of this could be expanded.

#### **A.5.13. Centralization versus Decentralization.**

An important question being discussed at Bank 5 these days is whether they should centralize not.

**Customers like *one* contact in a bank for *all* their activities.**

There is always an advantage of one centralized contact-point, but Bank 5 does not have an answer yet to this important strategic question, and as to which process will they adapt for either of the two strategies.

#### **Author's Comment 16:**

It seems very like that the lack of a composite information paradigm and technology based on such a vision is preventing Bank 5 to satisfactorily develop a system based on its natural business and geographical heterogeneities.



## Interview with Chief General Manager and Director of Systems

### **A.5.14. Directorate's Perception of Merger.**

Several divisions and departments fall under the Chief General Manager. He sees the two merged components becoming

**a global player in the long run, but necessarily passing through three to four phases of integration.**

There is a lot of information with these two components and the concern is how to utilize this rich information from both sources.

Another concern also is how the bank can succeed – from the beginning of the merger, i.e., the end of 1990 – in using the information from both banks for the Management Board and how to set Bank 5's quarterly objectives based on possibly consolidated information. They cannot wait too long for information at the Board level. They need it now.

**Each component's personnel do not understand the other component's systems.**

This is obvious because, until recently they were competitors, and they did not have access to each other's systems. Each component has not even made much effort really to understand the other's systems also. Therefore, the success of the merger will very much depend now upon how each will succeed in understanding the other's systems and in accepting to retain only those systems

that have the promise to provide higher productivity – not just *pushing* the ones that they have been using most often in the past.

**Author's Comment 17:**

In expecting the common user to understand the nuances of systems productivity, the bank is assuming a lot of computeracy on the part of these users. Similarly, in delegating that a portfolio of 'best-of-both' systems be made, a good deal of state-of-art knowledge regarding Composite Information Systems is assumed on the part of systems people who, as it is will need time to give up one working-set in favor of the other.

Secondly, there is the concern for the long run. The bank needs to work out the best way that it can use the portfolio of systems of its two components. Should one component's systems be used or should the other component's be deployed ?

There can also be a very negative psychological effect in using one component's systems only. It will disappoint the other component's personnel as to why their system was not chosen for usage. A choice is to use the best of the two but that what are the criteria for deciding this ? Or, alternatively, use neither and re-develop from the scratch. But then

**the question is what is the definition of best methodology ?**

What are the right criteria to establish the soundness or otherwise of one system vis a vis another one ? And of beginning the development of a new system ?

#### **A.5.15. Human Considerations.**

The choice of system selection may presently be based much more on the psychological reasons and not necessarily on objective reasoning. If both types of reasoning were to overlap – to some degree – then there could be lot of focused organizing. So, currently, the concern is to establish the right criteria.

Having studied an independent assessment of both bank's portfolios of information systems, the Directorate has seen that

**there are some systems that are similar,**

meaning that some fields and records may not have difficulty in transferring information to each other. The data of such systems can be merged as such. In these, the application and the operating environment is also similar. For example, the general ledger system and the client database both are similar. But, again, the main issue is which one of the two to choose, because

**both can not run at the same time.**

Otherwise, the benefit of scale would be lost. Also we cannot have two general ledgers, because legally that would not be allowed.

#### **A.5.16. Consolidating Strategic Information.**

The generic question of how long it would take the Systems Department of Bank 5 to produce a result to any random query made by senior executives in the Board, the answer is that in the area of risk management, before the merger, it used to take about two days or so and the information was often correct. This was too long and expensive.

#### **Executive queries are themselves very general and not structured**

and so the structuring of query also took a lot of time out of the two days or so that were used in the process.

#### **Author's Comment 18:**

As the DBMS is not user-friendly and does not provide views in response to unstructured queries, it is important to structure the planned EIS on a more friendly pattern. The fact that systems are not inter-connected at the logical level, explains why even a simple query may take too long to consolidate and answer fully.

Bank 5 is open and willing to consider suggestions from the CISL in the evaluation criteria for the selection of the 'right' system (from among the two portfolios) as well as how to arrive at an optimal synergy of the systems.

**Author's Comment 19:**

As mentioned in Chapter 6, CIS/TK is a rational paradigm. While it has shown success in some important tests, it is still evolving – and will continue to develop for a long time. It does not provide a tailored, ready-made solution and so, expectations should be more on getting realistic, strategic and operational frameworks.

## Interview with Chief of Organization and Systems Development

### **A.5.17. Developmental Work.**

The Chief of Organization and Systems Development at the Central Computing Facility of Bank 5 plans future development of systems. The main function performed in CCF is the development of systems for home-country's head office and branches.

There is no system currently being developed for the international branches. The CCF follows a standard methodology adopted at sometime back at component. This is a standard for system development method. It is broken into several functions, e.g., the typical System Development Life Cycle (SDLC), divided into project definition, logical description, technical design, programming, implementation, and maintenance. It is a data oriented method supported by a design that is data proof.

#### **Author's Comment 20:**

It seems that Bank 5's systems division has sub-consciously taken a stand on one component's standard methodology. Additionally, prototyping and other fast-development methodologies are perhaps not being given enough testing in SDLC.

### A.5.18. Major Issues at Systems.

The CCA at Bank 5 has its own set of problems and issues that it is reviewing seriously. These are briefly described below in three parts; problems that were there *before* the merger, problems *due to* the merger, and the long-term problems.

#### A>5.18.1. Problems of Pre-Merger Times:

First, user requests.

**It is very difficult to translate the user requests and wishes into problem definitions,**

and therefore there are lots of iterations done. CCA offers technical solutions to the users, and – with several iterations – this process of problem definition is arrived at. This consumes a lot of time as every user wants *satisfaction*..

Second, consolidation.

**Consolidation of the branches is not possible today**

due to different data structures and data dictionaries. The necessary user interfaces have not been created yet. Therefore, it has been researched by the Development Department that it will be difficult to have interconnections between the two banks' systems. There is now a different department for data

dictionary, which group has been made responsible for selecting data from lower level for use at higher levels.

There is also

**a separate group for Data Management,**

which interprets the questions of the lower level. There is the possibility of loss of information through personal communication and transmission, but the bank's standard method is quite rigorous in transmitting information from one group to another. The new question now is the differences in the two databases of the bank. These need to be understood by the Data Management people at the bank as they operate at the lower level. They will need to incorporate this into the standard methodology and pass it on for higher level adoption later. If this is not fully possible, then obviously the integration of two databases of the components will not be achievable. Some other solution will be needed then.

**Author's Comment 21:**

Going to either extreme may not work well. It may be appropriate to work instead on a more realistic *hybrid* system that will compose information from the heterogeneous sources and enable bridges to exchange meaningful information at all levels (operational, organizational, strategic). Without such a provision, there will be a lot of manual buffers that could cause both, time delays as well as errors.



The efforts of the Development Department are currently focused on data organization from the end-user computing point-of-view. This will facilitate users to get around things, and the development department to get closer to the data management in the long run and focus on the data management and data engineering issues.

#### **A.5.18.2. Problems Due to Mergers.**

First, comparisons. Currently the Development Department is also busy comparing of the two portfolios of DBMS, especially the payment systems.

**The problems being studied are hardware and network structures because both are considerably different.**

One component has a particular network. The other component has another network from another country with quite different standards. At the highest levels, the two systems seem similar, but due to network interface differences, they cannot have compatibility and portability.

Second, bookkeeping difficulties. Central applications like customer databases, bookkeeping, etc., are different in both banks. Only the payments systems are similar, and their databases look alike, particularly because they have been developed on the same architecture. But when

**compared to the other (component's, their development philosophy is very different,**

This will cause book-keeping to go in error should the two systems be merged without caution and appropriate translation. Therefore, they have adopted a three-phased approach to integrate these related databases in the two banks.

*Phase I: Cosmetics.*

Have two outlines for one bank, getting information from both databases but in the end the two being cosmetically put together in a hard copy mode.

*Phase II: Conversion.*

Going to one system instead of two and to do this within the next two to three years.

*Phase III: Future.*

Investigate various criteria for success and optimization so that the future systems are in line with the expansion and consolidation philosophy of the bank, and on a flexible architecture that can accommodate different types of databases, different type of data structures in different locations, and also if possible in different geographies in terms of time zone and currencies in terms of countries.

**Author's Comment 22:**

Phase I clearly implies that physical and logical connectivities are most important. Phase II points towards organizational connectivity. And Phase III is a total (all four connectivities, including also strategic).

The first two phases above are very important and crucial for the merger to be successful. It may at first seem that the phases will all be achieved easily so, but this is not really true. It is the users who make the choice today, and they are not very literate about computers.

Third, system products. One component handles 75 to 100 different systems, or approximately about 10,000 programs. Sixty percent of these systems are on-line. The rest are batch-processed. The above figures relate only to the domestic systems, for use inside home country only. The other component has its own slew of programs and on-line/batch combinations. Harmonizing these will be a mammoth task.

**A.5.18.3. Long-Term.**

First, managing the progress of the three phases mentioned above in Section A.5.18.3.

Second, creating an end user environment whereby end users should be able to pull out their own answers to simple queries, so that requests to the Systems Department and backlog of systems processing is considerably reduced.

Third, controlling the budget of the corrective systems to a manageable amount.

Fourth, maintenance of all systems through a standard methodology so as to pro-actively prepare newer systems for the future.

Fifth, employing consistency in the long-run. This will handle the problem of describing data, its meaning, its usage, etc. for transaction processing, not for EIS or management in general. There has to be an agreement on what is data and what is its meaning. The bank is trying to create dictionaries to register all data and meta-data. They are embodying a set of techniques to see old data and what it means and then to get an overall picture for their systems.

Bank 5 also wants to get data from certain parties outside the bank and to subsequently compile meaningful statistics for top management. Normally, it takes one full-time person a few weeks to discover if the information provided is right or wrong. If the correct information from outside is properly integrated with the information available within, it can be an excellent achievement *but* it can also compound data problems. Care will need be exercised regarding which definition of data to use.

**Author's Comment 23:**

Three of the five problems relate to consistency of meta-data, i.e., definition of data and its description. With changing systems, changing practices, and differences in external versus internal environments, things may not be very easily manageable without strategic and organizational connectivities.

Some Computer-Aided Software Engineering (CASE) technology and reverse-engineering processes are also being used by Bank 5's Development Division. Nothing spectacular is reported but it is genuinely believed that CASE technology will help in the short- and long-runs.

Sixth, foreign branches have remained very autonomous so far. In the interest of cost effectiveness, need for information, controls, risk assessment, and loan management,

**value added networks will be required, not just integrated systems.**

The bank will grow through value added networks and there will be more interaction between foreign and head office systems. But they are running short of time.

#### **A.5.19. Future Development.**

The future emphasis will be to

**develop systems that will support newer products evolving up in the financial services market.**

The backlog of systems is sheerly due to the

**lack of appropriately I/T technology, especially in the integration at the higher level.**

The development department has put up a pilot project to test systems for commercial processing in the branches and test them in their very aggressive mode in 1992. That is where the actions will be and that is from where they will have to get information. Running short of time, they have designed systems which they are now testing through a pilot after the end of August.

## Interview with Department Manager, Systems Programming

### **A.5.19. Technical Platforming.**

The Department Manager is in charge of the systems programming and is the architect of the technical information structure of Bank 5. He basically deals with hardware systems, software selection, and data communications and networks. He has made efforts to make the two different systems talk. His

**efforts have succeeded only in the minis-to-mainframes and PCs-to-mainframes.**

Currently his section is also involved in investigating how different systems could merge and synergize and address the question as to which system is good.

Systems Programming Section is also investigating into the long-term impact of centralized versus decentralized systems. His personal opinion is that

**centralization would be a helpful idea,**

and so, tools should be developed in areas that will help a central computer keep all the information. The rest need to be netted outward and should have small portions of that system relevant only to that network.

**Data should necessarily flow-in towards the central computer, no matter how large this computer has to be,**

so that operation can take place on a real-time basis. The manager feels a need for developing a Tool Kit, similar to the architecture of CIS/TK with some differences. Bank 5's stress needs to be on

**a tool kit that will make systems talk across each other at lower levels also,**

not just for centralization. So centralization and limited decentralization would be the best way to go about the post-merger synergies. Because the merger is a new experience and because no one has exact answers to systems synergy problems, they are still investigating into various possibilities.

The bank believes that it is most important

**to have a set of tools that will define the interfaces.**

Instead of waiting four years to develop a new system from the scratch,. He believes the time can be shortened by using tools and to have integrated systems.

**Author's Comment 24:**

CIS/TK being a *set of tools* for different architectures and DBMSs can be given a good try at Bank 5. It will provide the bank with a vision of the extents involved in the connectivity spectrum. Additionally, on-line, real-time composition from the two heterogeneous systems will be possible through instance and semantic matching.



## BIBLIOGRAPHY

Ackoff, Russell L.

*Redesigning the Future*

John Wiley and Sons, New York, 1974

Anderson, James A.

*Public Policy-Making*

Praeger Publishing, Inc., New York, 1975

Baltensperger, E. and J. Dermine:

*European Banking, Prudential, and Regulatory Issues*

Salomon Brothers Center for the Study of Financial Institutions, N.Y.U., 1989

Bartlett, Christopher A. and Sumantra Ghoshal:

*Managing Across Borders: New Strategic Requirements*

Sloan Management Review, Summer 1987

Bartlett, Christopher A. and Sumantra Ghoshal:

*Managing Across Borders: New Organizational Responses*

Sloan Management Review, Fall 1987

Bernstein, Philip A. and Nathan Goodman:

*Concurrency Control in Distributed Database Systems*

Computing Surveys, Volume 13, Number 2, June 1981

Bower, Joseph L.

*The Two Faces of Management*

Houghton Mifflin Company, Boston, Massachusetts, 1983

Codd, Edgar F.

*The Relational Model for Database Management: Version 2*

Addison-Wesley Publishing Company, Reading, Massachusetts, 1990

Colchester, Nicholas

*Europe's Internal Market: What Are They Building?*

Supplement to The Economist, July 8, 1989

Commission of the European Communities:

*Economic and Monetary Union - The Economic Rationale and Design of the System*

CEC, Brussels, March 1990

Commission of the European Communities:

*Second Council Directive on the Coordination of Laws, Regulations, and Administrative Provisions Relating to the Taking-up and Pursuit of the Business of Credit Institutions*

CEC, Brussels, Documents: 77/780, 7239, 7240, 4794, 7130, and amendments.

Date, Chris J.

*An Introduction to Database Systems: Volumes I and II*

Addison-Wesley Publishing Company, Reading, Massachusetts, 1990

Engel, Gerard

*Changes in the European Financial Environment - Consequences for the Banking Industry*

Presentation at The Benjamin Franklin Program, I.E.P., Paris, June 1990

Garella, Paolo G.

*European Industry Before 1992: Mergers and Acquisitions*

Foundation Nationale des Sciences Politiques, July 1989

Ghani, Usman, Wilberto Martinez, and Jackie Rosner:

*A Study of Global Custody Systems*

M.I.T., December 1990

Ghani, Usman A.

*Business Issues Involved in Global Systems Composition*

I.B.C. Conference on Systems Strategies for Global Operations, New York City, November 1990

Ghani, Usman A.

*Gaining Competitive Advantage in the CPEs Through Information Technology Reorganization*

M.I.T., December 1990

Ghani, Usman A.

*The People-Support-Technology Model© (in Case Study Assignment on Citicorp)*

M.I.T., February 1990

Gupta, Amar, Stuart Madnick, Christopher Poulsen, and Teresa Wingfield:  
*An Architectural Comparison of Contemporary Approaches and Products for Integrating Heterogeneous Information Systems*

International Financial Services Research Center, M.I.T. Sloan School of Management, November 1989

Gupta, Amar and Stuart Madnick:

*Integrating Information Systems in a Major Decentralized International Organization*

Knowledge-Based Integrated Information Systems Engineering Project, M.I.T., 1987

Gurbaxani, Vijay and Haim Mendelson:

*An Integrative Model of Information Systems Spending Growth*

Information Systems Research, Volume 1, Number 1, March 1990

Hanley, Thomas H., John D. Leonard, Diane B. Glossman, Dina I. Oddis, Steven I. Davis, William Vincent, Stephen Lewis, Ron Napier, and Tetsuo Kitagawa:

*European Banking Integration in 1992*

Salomon Brothers, Inc., June 1989

Hawawini, Gabriel and Bertrand Jacquillat:

*European Capital Markets: The Road to 1992 and Beyond*

Salomon Brothers Center for the Study of Financial Institutions, N.Y.U., 1989

Hax, Arnaldo C. and Nicolas S. Majluf:

*Strategic Management: An Integrative Perspective*

Prentice Hall, Englewood Cliffs, New Jersey, 1984

Hoaglin, David C., Richard J. Light, Bucknam McPeck, Frederick Mosteller, and Michael A. Stoto:

*Data for Decisions - Information Strategies for Policymakers*

University Press of America, Lanham, Maryland, 1982

Krishna, Shailendra

*The Design of Global Financial Systems: A Case Study*

Master of Science Thesis in Management, M.I.T., 1990

Larréché, Jean-Claude, William W. Powell, and Hardy Deutz Ebling:

*Key Strategic Marketing Issues for the 1990's*

INSEAD European Institute of Business Administration, Fontainebleau, 1987

Lederman, Ellen:

*U.S. Financial Institutions Meeting the Challenge of EC 1992*

U.S. Mission to the European Communities, August 1989

Lessard, Donald R.

*International Financial Management*

John Wiley and Sons, New York, New York, 1985

Levich, Richard M.

*The Euromarkets After 1992*

Salomon Brothers Center for the Study of Financial Institutions, N.Y.U., 1989

Levitt, Theodore

*The Globalization of Markets*

Harvard Business Review, May-June 1983

Linder, Jane C.

*Integrating Organizations Where Information Technology Matters*

Doctor of Business Administration Thesis, G.S.B.A., Harvard University, 1989

Litwin, Witold, Leo Mark, and Nick Roussopoulos:  
*Interoperability of Multiple Autonomous Databases*  
ACM Computing Surveys, Volume 22, Number 3, September 1990

Loveman, Gary W.  
*The Productivity of Information Technology Capital: An Economic Analysis*  
Department of Economics, M.I.T., January 1986

Lucas, Henry C.  
*Organizational Power and the Information Services Department*  
Communications of the ACM, Volume 27, Number 1, January 1984

Madnick, Stuart E. and Y. Richard Wang:  
*Logical Connectivity: Applications, Requirements, and an Architecture*  
Sloan School of Management Working Paper, M.I.T., August 1988

Marois, Bernard  
*What 1992 is Going to Change for Firms in the Field of Finance*  
Presentation at The Benjamin Franklin Program, I.E.P., Paris, June 1990

Mullinex, Andrew  
*International Banking and Financial Systems: A Comparison*  
Graham & Trotman, London, England, 1987

Nielsen, Niels P.  
*Regional European Banking in the Light of 1992*  
Master of Science Thesis in Management, M.I.T., 1990

Paget, Marie Linn  
*A Knowledge-Based Approach Toward Integrating International On-Line*  
*Financial Databases*  
Master of Science Thesis in Management, M.I.T., 1989

Porter, Michael E,  
*The Competitive Advantage of Nations*  
The Free Press, New York, New York, 1990

Prahalad, C. K. and Yves L. Doz:  
*An Approach to Strategic Control in MNSs*  
Sloan Management Review, Summer 1981

Quelch, John A., Robert D. Buzzell, and Eric R. Salama:  
*The Marketing Challenge of 1992*  
Addison-Wesley Publishing Company, Reading Massachusetts, 1990

Rigaldies, Bertrand  
*Technologies and Policies for the Development of Composite Information Systems in Decentralized Organization*  
Master of Science Thesis in Technology and Policy, M.I.T., 1990

Roach, Stephen S.  
*White-Collar Productivity: A Glimmer of Hope?*  
Special Economic Study, Morgan Stanley and Company, New York, 1988

Rockart, John F.  
*The Rise of Managerial Computing*  
Center for Information Systems Research, M.I.T., 1986

Santomero, Anthony M.  
*European Banking in Post-1992: Lessons From the United States*  
Salomon Brothers Center for the Study of Financial Institutions, N.Y.U., 1989

Sheth, Amit P. and James A. Larson:  
*Federated Database Systems for Managing Distributed, Heterogeneous, and Autonomous Databases*  
ACM Computing Surveys, Volume 22, Number 3, September 1990

Steiner, Thomas D. and Diogo B. Teixeira:  
*Technology in Banking - Creating Value and Destroying Profits*  
Dow Jones-Irwin, Homewood, Illinois, 1990

Thygesen, Niels

*From the European Monetary System to Economic and Monetary Union - How and Why?*

Open Economics Review, Volume 1, 1990

von Hippel, Eric A.

*The Sources of Innovation*

Oxford University Press, New York, 1989

Walter, Ingo and Roy C. Smith:

*Investment Banking in Europe After 1992*

Salomon Brothers Center for the Study of Financial Institutions, N.Y.U., 1989

Wang, Richard and Stuart Madnick:

*Connectivity Among Information Systems*

Composite Information Systems Project, M.I.T., September 1988

Wang, Y. Richard and Stuart E. Madnick:

*Where Does the Data Come From: Managing Data Integration with Source Tagging Capabilities*

Center for Information Systems Research, M.I.T., August 1990

Warner, Timothy N.

*Information Technology as a Competitive Burden*

Sloan Management Review, Fall 1987